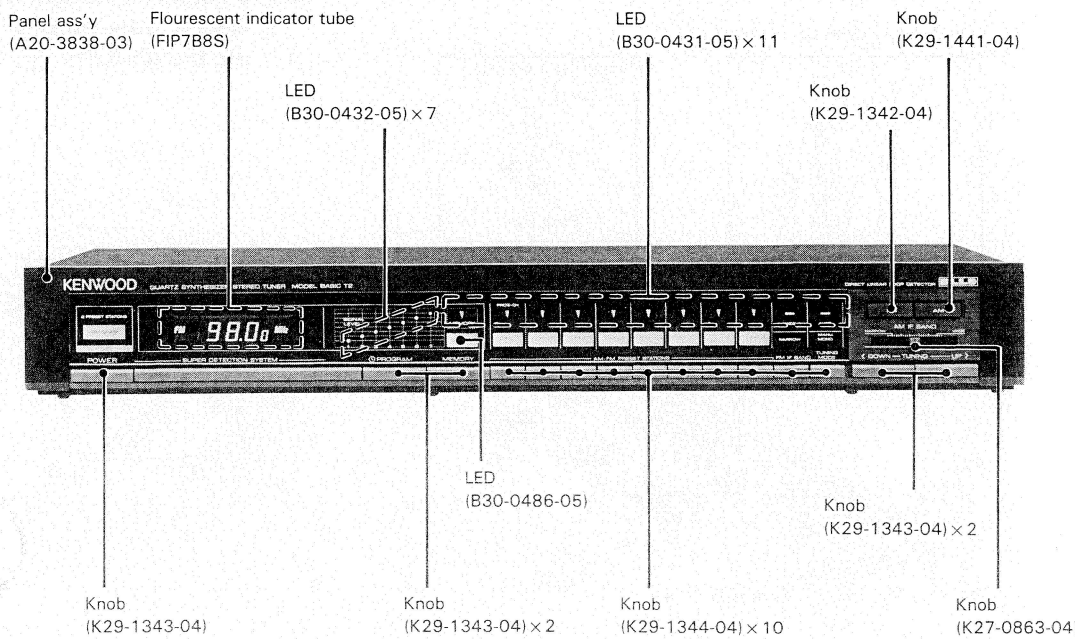
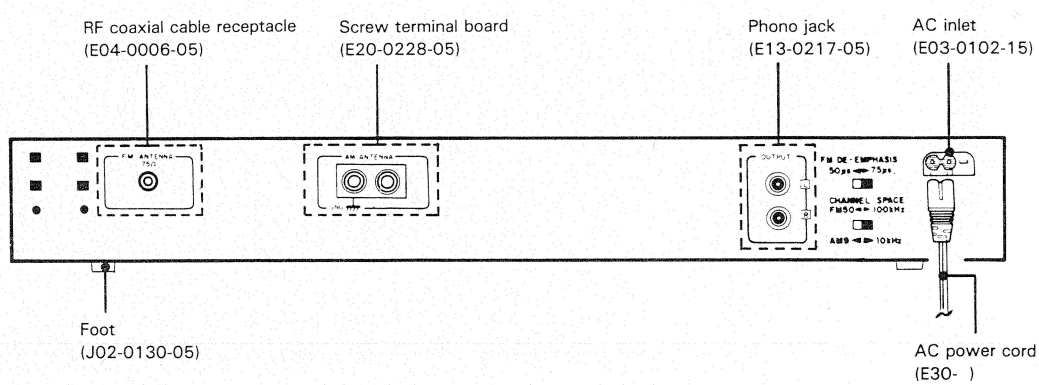
SERVICE MANUAL

KENWOOD

BASIC T2

QUARTZ SYNTHESIZER STEREO TUNER





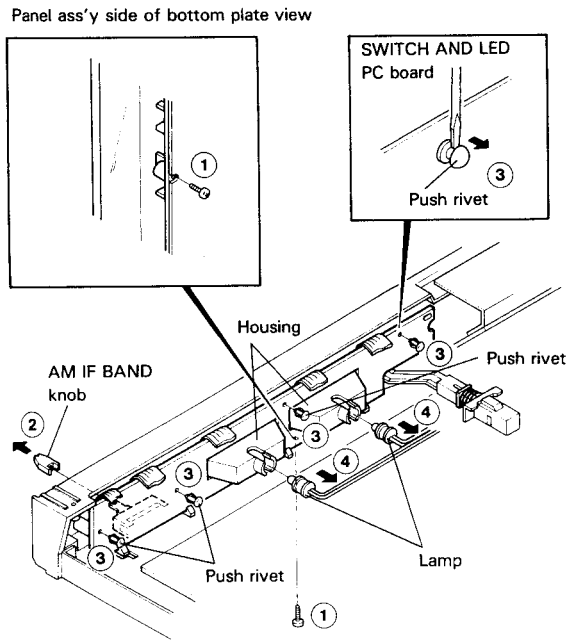
* Refer to Parts List on page 12.

DISASSEMBLY FOR REPAIR

SWITCH AND LED PC BOARD

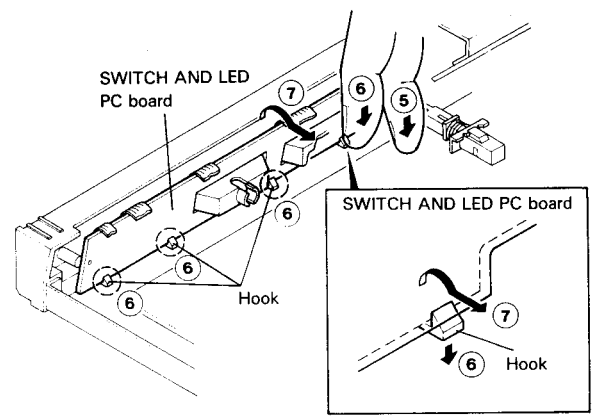
There are two ways of removing this PC board. One is for replacement of components only on this PC board. The other is for replacement of components on this PC board and TUNER PC board.

The procedures written below is for former purpose. The procedures for the latter purpose is written in "NOTE" at the end.

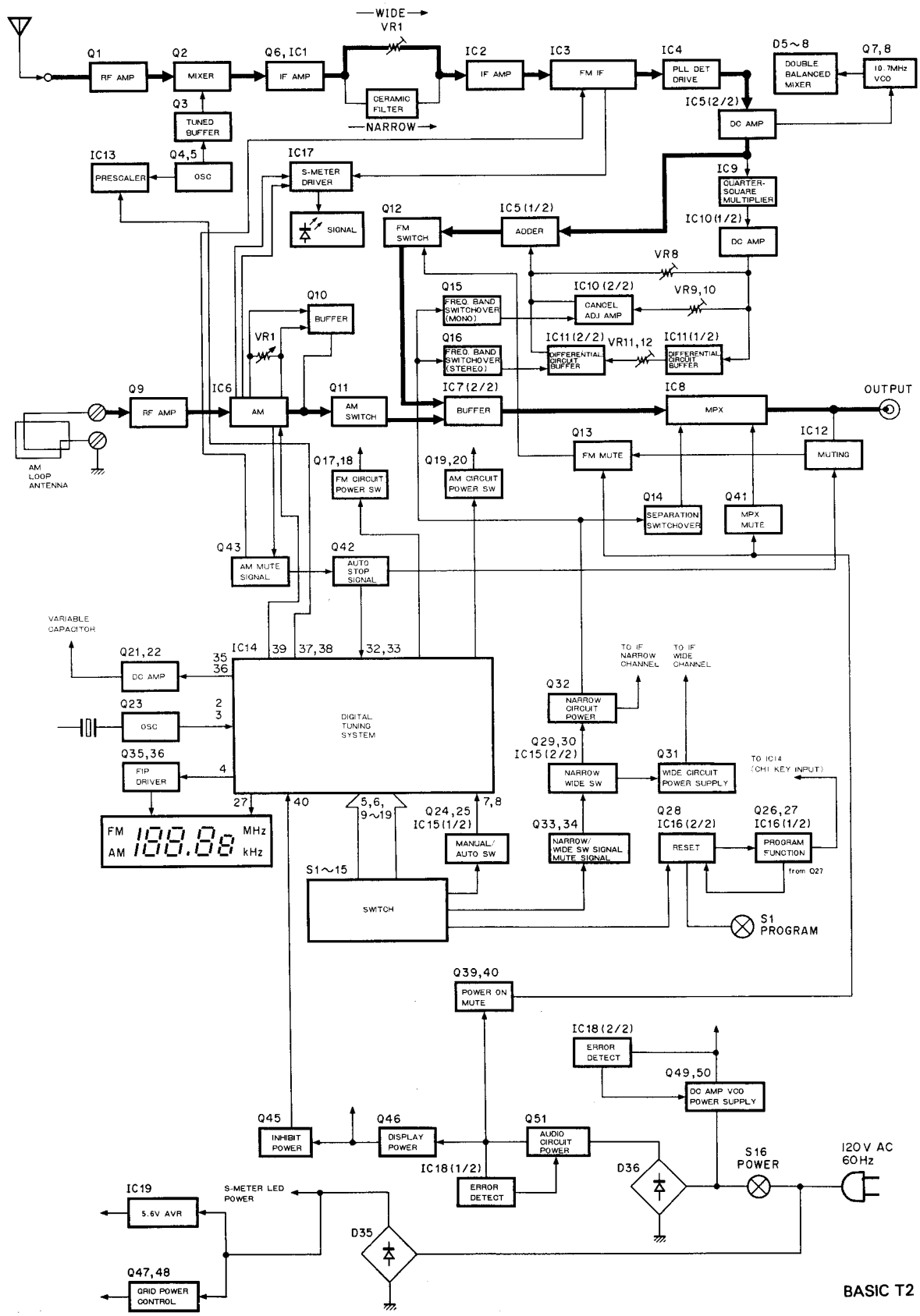


1. Remove the metallic cabinet and the panel assembly first. Then remove the screw of the bottom plate at the center of the panel side.
2. Pull the AM IF BAND knob off.
3. Remove 4 push rivets retaining the PC board.
4. Pull 2 lamps out from the housing.
5. While pushing the bottom plate down, release the PC board from the hook. This will enable the PC board to be pulled out.

NOTE: If replacement of components on the TUNER PC board is also necessary, remove the bottom plate instead of the panel assembly first. Then perform ② ~ ④, ⑥ and ⑦ in the figure.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

DDC (Distortion Correcting Circuit)

The relationship between the FM tuner selectivity and distortion is as follows. When the pass band range of the IF filter is extended, the selectivity is increased, but so is the distortion. Even with an ideal IF filter, harmonic distortion may occur when the signal passes through it. In addition, the IF filter normally consists of several steps connected in series and this makes the distortion worse.

Figure 1 shows a comparison of the demodulated signal distortion between 1-step, 2-step and 4-step series IF filters. Figure 2 shows a comparison of the selectivity at IF stage between the IF filters.

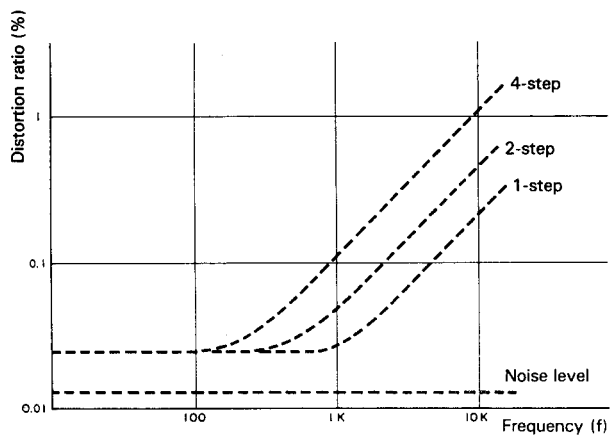


Fig. 1 Demodulated signal distortion

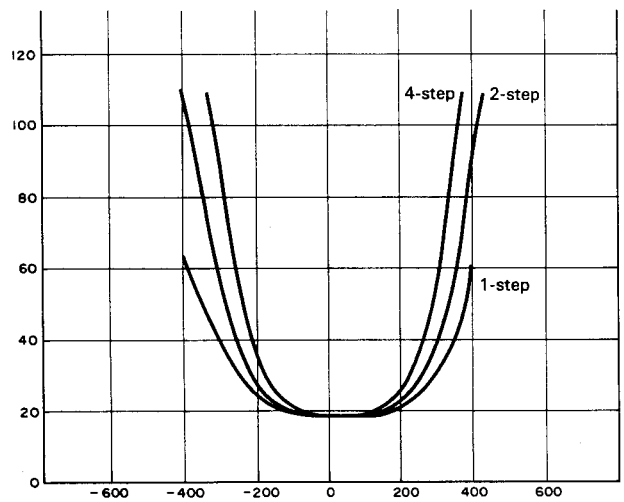


Fig. 2 Selectivity at IF stage

Assuming the FM demodulated signal passing through the IF filter is S,

S = (Reference frequency (f)) + {K_2 (2nd harmonic distortion) + K_3 (3rd harmonic distortion) + ... + K_n (n harmonic distortion)} + {L_2 (2nd harmonic distortion) + L_3 (3rd harmonic distortion) + ... + L_n (n harmonic distortion)}

In the above formula, coefficients K_2, K_3, ...K_n contain component (f) and L_2, L_3, ...L_n contain component (f^2).

The phase of the signal with coefficients K is 90° shifted from that of the reference frequency. The phase of the signal with L is the same as that of the reference frequency.

The distortion components generated from the IF filter are produced from the main and sub signals and the 2nd and 3rd harmonic frequencies produced from both the main and the sub signals will overlap with the sub and main signal ranges as shown in Fig. 3.

To prevent distortion increase from the mutual effect, the DDC (Distortion Correcting Circuit) generates frequency components which have the equivalent amplitude and phase for 2nd and 3rd harmonic distortion signals to eliminate these distortion signals.

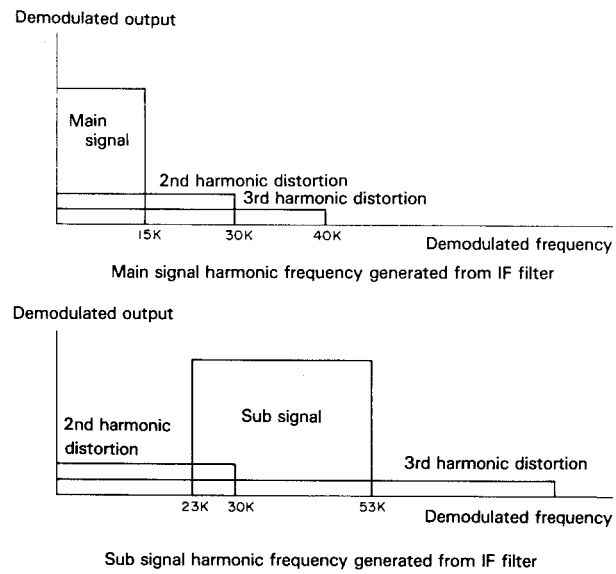


Fig. 3 Distortion generated from IF filters

With this system, the DDC can be designed according to the characteristics of the IF filter and each harmonic distortion (2nd , 3rd, ...) can be compensated. In addition, the distortion generated from the IF filter can be compensated equivalently, resulting in decreased distortion at the tuning point of the synthesized tuner.

CIRCUIT DESCRIPTION

NEW CIRCUIT OF BASIC T2

1. DLLD (Direct Linear Loop Detector) and DDC (Distortion Correcting Circuit)

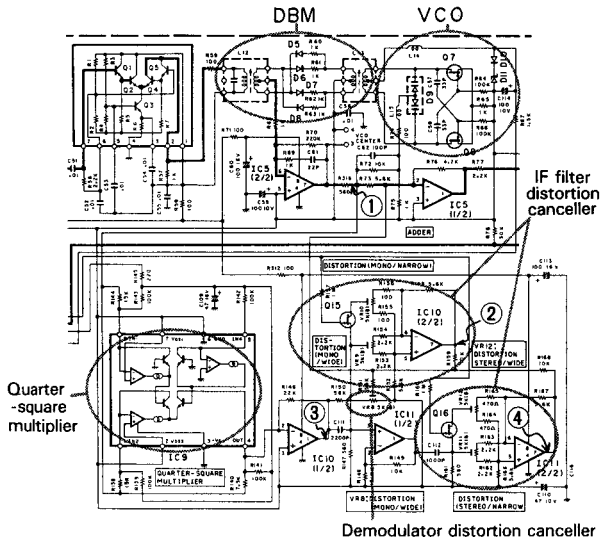


Fig. 4 Circuit diagram of DLLD and DCC

In BASIC T2, the 2nd harmonic distortion of the PLL demodulator and the 2nd harmonic distortion generated when the FM signal passes through the IF filter are cancelled.

① The output of IC5 contains the distortion components produced from the IF filter and PLL demodulator.

② The 2nd harmonic distortion component is generated here by passing the signal from point ① through the quarter-square multiplier. Its level is adjusted by VR8 and used to compensate the PLL demodulator distortion.

③ The signal used to compensate the monaural 2nd harmonic distortion is output here.

④ The signal used to compensate the one-stereo channel 2nd harmonic distortion is output here. In combination with the signals from point ③ and ④, the distortion produced from the IF filter is compensated. C111, R147, C112 and R161 make up the differential circuit to compensate the phase.

2. Program switch

When the audio timer is set so that the power is supplied to the tuner twice (ON-OFF→ON-OFF), two different stations stored in the memories can be recalled in turn. For the first power ON, the station received immediately before the power was turned off is selected. When the power is resupplied, the station stored in CH1 memory can be selected.

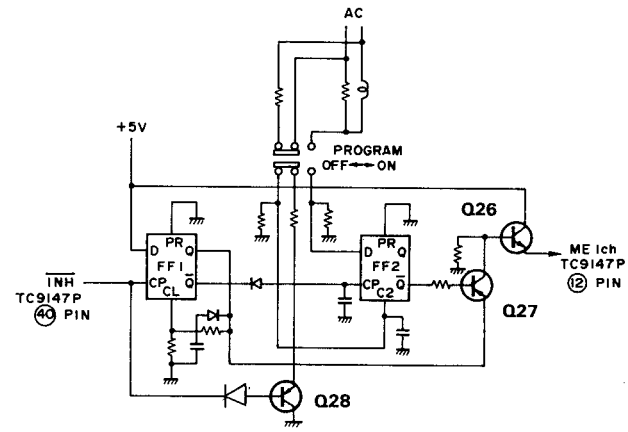


Fig. 5 Program switch circuit diagram

The one-shot multi of IC16 (2/2) is driven by the rising edge of the INH signal (pin 40) of IC14 (TC9147P) and the IC16 (1/2) is set to standby mode by the falling edge of the IC16 (2/2). At this time, the unit recalls the station stored in the last channel memory. When the power is resupplied, the leading edge of the INH signal drives the IC16 (2/2), the base of Q27 becomes "L", the emitter becomes "H" and the Q27 turns ON. At the same time, Q26 turns ON, "H" signal is applied to the key input pin (pin 12) of TC9147P and the unit recalls the station stored in preset memory channel 1.

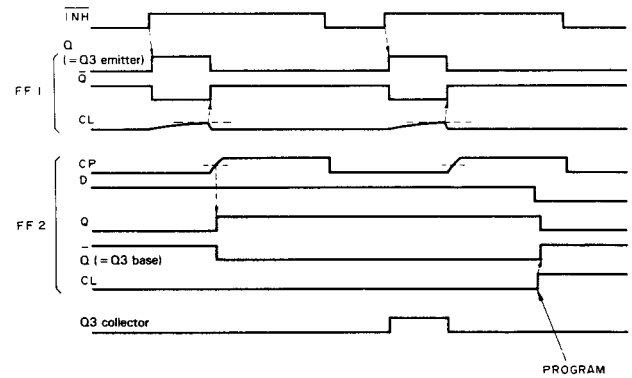


Fig. 6 Timing diagram

ADJUSTMENT

ADJUSTMENT

NO.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG.
FM SECTION	Unless otherwise specified, the individual switches should be set as follows: SELECTOR: FM FM IF BAND: WIDE TUNING MODE: AUTO						
1	**BAND EDGE (1)**	—	Connect a DC voltmeter between TP8 and 9 (GND).	87.5 MHz	L7	7.0 V	(a)
2	**BAND EDGE (2)**	—	Connect a DC voltmeter between TP8 and 9 (GND).	108.0 MHz	TC5	23.0 V	(a)
	Repeat alignments 1 and 2 several times.						
3	**DETECTOR (1)**	(A) 98.0 MHz 0 dev 100 dB (ANT input)	Connect a DC voltmeter between TP1 and 2.	98.0 MHz	L11	Confirm that voltage changes to both + and − direction. Then adjust to 0 V.	(b)
4	**DETECTOR (2)**	(A) 98.0 MHz 0 dev 100 dB (ANT input)	Connect a DC voltmeter between TP3 and 4.	98.0 MHz	L13	Confirm that voltage changes to both + and − direction. Then adjust to 0 V.	(c)
5	**RF ALIGNMENT (1)**	(A) 90.0 MHz 1 kHz, ±75 kHz dev 60 dB (ANT input)	(B)	MODE: MONO 90.0 MHz	L1, 2, 3, 6	Maximum amplitude and symmetry of the oscilloscope display.	
6	**RF ALIGNMENT (2)**	(A) 106.0 MHz 1 kHz, ±75 kHz dev 60 dB (ANT input)	(B)	MODE: MONO 106.0 MHz	TC1, 2, 3, 4	Maximum amplitude and symmetry of the oscilloscope display.	
	Repeat alignments 5 and 6 several times.						
7	**IF GAIN (WIDE)**	(A) 98.0 MHz 0 dev Adjust "ANT-input" so that only the SIGNAL LEVEL indicator "1" goes on at NARROW MODE.	SIGNAL LED	98.0 MHz	VR1	Adjust VR1 so that SIGNAL LED goes off. Then, adjust VR1 and stop at the point where LED "1" goes on.	
8	**VCO**	(A) 98.0 MHz 0 dev 60 dB (ANT input)	Connect a frequency counter to TP7 via an AC voltmeter.	98.0 MHz	VR3	76.00 KHz	(d)
9	**PILOT CANCELLER (1)**	(C) 98.0 MHz 0 dev Selector: L or R Pilot: ±6.75 kHz dev 60 dB (ANT input)	(B)	98.0 MHz	VR4	Minimum 19 kHz output.	
10	**PILOT CANCELLER (2)**	(C) 98.0 MHz 0 dev Selector: L or R Pilot: ±6.75 kHz dev 60 dB (ANT input)	(B)	98.0 MHz	L21	Same output. (L, R)	
	Repeat alignments 9 and 10 several times.						
11	**DISTORTION (1) (MONO WIDE)**	(A) 98.0 MHz 1 kHz, ±75 kHz dev 80 dB (ANT input)	Connect an oscilloscope to the OUTPUT terminal via a distortion meter.	98.0 MHz	VR9	Minimum distortion.	(e)
12	**DISTORTION (2) (MONO WIDE)**	(A) 98.0 MHz 1 kHz, ±75 kHz dev 80 dB (ANT input)	Connect an oscilloscope to the OUTPUT terminal via a distortion meter.	98.0 MHz	VR8	Minimum distortion. Confirm that the Lissajous' figure on the screen of the oscilloscope become a straight line.	(e)
13	**DISTORTION (3) (MONO NARROW)**	(A) 98.0 MHz 1 kHz, ±75 kHz dev 80 dB (ANT input)	(B)	FM IF BAND: NARROW 98.0 MHz	VR10	Minimum distortion.	
14	**DISTORTION (4) (STEREO WIDE)**	(C) 98.0 MHz 1 kHz, ±68.25 kHz dev Selector: L Pilot: ±6.75 kHz dev 80 dB (ANT input)	(B)	98.0 MHz	L5	Minimum distortion.	

ADJUSTMENT

NO.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTING	ALIGNMENT POINTS	ALIGN FOR	FIG.
15	**DISTORTION (5) (STEREO WIDE)**	(C) 98.0 MHz 1 kHz, ±68.25 kHz dev Selector: L Pilot: ±6.75 kHz dev 80 dB (ANT input)	(B)	98.0 MHz	VR11	Minimum distortion.	
16	**DISTORTION (6) (STEREO NARROW)**	(C) 98.0 MHz 1 kHz, ±68.25 kHz dev Selector: L Pilot: ±6.75 kHz dev 80 dB (ANT input)	(B)	FM IF BAND: NARROW 98.0 MHz	VR12	Minimum distortion.	
17	**MUTE LEVEL**	(A) 98.0 MHz 1 kHz, ±75 kHz dev 10 dB (ANT input)	(B)	98.0 MHz	VR2	Turn VR2 until the output waveform disappears. Then turn VR2 until the output waveform appears again.	
18	**SEPARATION (1) (WIDE)**	(C) 98.0 MHz 1 kHz, ±68.25 kHz dev Selector: L Pilot: ±6.75 kHz dev 80 dB (ANT input)	(B)	98.0 MHz	VR6	Minimum crosstalk.	
19	**SEPARATION (2) (WIDE)**	(C) 98.0 MHz 1 kHz, ±68.25 kHz dev Selector: R Pilot: ±6.75 kHz dev 80 dB (ANT input)	(B)	98.0 MHz	VR5	Minimum crosstalk.	
20	**SEPARATION (3) (WIDE)**	(C) 98.0 MHz 10 kHz, ±68.25 kHz dev Selector: L or R Pilot: ±6.75 kHz dev 80 dB (ANT input)	(B)	98.0 MHz	L16 (Yellow core only)	Minimum crosstalk.	
		Repeat alignments 18 ~ 20 several times.					
21	**SEPARATION (4) (NARROW)**	(C) 98.0 MHz 1 kHz, ±68.25 kHz dev Selector: L or R Pilot: ±6.75 kHz dev 80 dB (ANT input)	(B)	FM IF BAND: NARROW 98.0 MHz	VR7	Minimum crosstalk.	
AM SECTION		Keep the AM loop antenna installed. SELECTOR: AM AM IF BAND: WIDE					
(1)	**BAND EDGE (1)**	—	Connect a DC voltmeter between TP8 and 9 (GND).	522 kHz	L19	2.0 V	(a)
(2)	**BAND EDGE (2)**	—	Connect a DC voltmeter between TP8 and 9 (GND).	1611 kHz	TC7	20.0 V	(a)
		Repeat alignments (1) and (2) several times					
(3)	**RF ALIGNMENT (1)**	(D) 630 kHz 400 Hz, 30% mod	(B)	AM IF BAND: NARROW 630 kHz	L18	Maximum amplitude and symmetry of the oscilloscope display.	
(4)	**RF ALIGNMENT (2)**	(D) 1440 kHz 400 Hz, 30% mod	(B)	AM IF BAND: NARROW 1440 kHz	TC6	Maximum amplitude and symmetry of the oscilloscope display.	
		Repeat alignments (3) and (4) several times.					
(5)	**IF TRANSFORMER**	Sweep generator: 10.7 MHz Connect RF OUT of sweep generator to pin 5 of IC7 via 0.022μF capacitor.	Connect H OUT of sweep generator and H (or X) terminal of the oscilloscope. Connect V (or Y) terminal of the oscilloscope to the junction of C82 and R96.	1000 kHz (999 kHz)	L20	Maximum amplitude and symmetry of the oscilloscope display.	(f)

REGLAGE

REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION MF	Sauf en cas d'indications spéciales, régler chaque commutateur comme suit: SELECTOR: FM FM IF BAND: WIDE TUNING MODE: AUTO						
1	**BORD DE BANDE (1)**	—	Connecter un voltmètre CC entre les TP8 et 9 (GND).	87,5 MHz	L7	7,0 V	(a)
2	**BORD DE BANDE (2)**	—	Connecter un voltmètre CC entre les TP8 et 9 (GND).	108,0 MHz	TC5	23,0 V	(a)
	Répéter les alignements 1 et 2 plusieurs fois.						
3	**DETECTEUR (1)**	(A) 98,0 MHz 0 dév 100 dB (Entrée ANT)	Connecter un voltmètre CC entre les TP1 et 2.	98,0 MHz	L11	Affermir que la tension change dans la direction + et −. Alors ajuster à 0 V.	(b)
4	**DETECTEUR (2)**	(A) 98,0 MHz 0 dév 100 dB (Entrée ANT)	Connecter un voltmètre CC entre les TP3 et 4.	98,0 MHz	L13	Affermir que la tension change dans la direction + et −. Alors ajuster à 0 V.	(c)
5	**ALIGNEMENT HT (1)**	(A) 90,0 MHz 1 kHz. ±75 kHz dév 60 dB (Entrée ANT)	(B)	MODE: MONO 90,0 MHz	L1. 2. 3. 6	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
6	**ALIGNEMENT HT (2)**	(A) 106,0 MHz 1 kHz. ±75 kHz dév 60 dB (Entrée ANT)	(B)	MODE: MONO 106,0 MHz	TC1. 2. 3. 4	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
	Répéter les alignements 5 et 6 plusieur fois.						
7	**FI GAIN (WIDE)**	(A) 98,0 MHz 0 dév Ajuster "Entrée-ANT" que le SIGNAL LEVEL indicateur "1" seul s'allume au NARROW MODE.	SIGNAL LED	98,0 MHz	VR1	Ajuster VR1 que SIGNAL LED est non allumé. Alors, ajuster VR1 et arrêter le mouvement de VR1 au moment où le LED "1" s'allume.	
8	**OSCILLATEUR CONTROLE PAR LA TENSION**	(A) 98,0 MHz 0 dév 60 dB (Entrée ANT)	Connecter un compteur de fréquence à TP7 par l'intermédiaire d'un voltmètre CA.	98,0 MHz	VR3	76,00 kHz	(d)
9	**CIRCUIT SUPPRESSION DE SIGNAL PILOTE (1)**	(C) 98,0 MHz 0 dév Sélection: L ou R Signal pilote: ±6,75 kHz dév 60 dB (Entrée ANT)	(B)	98,0 MHz	VR4	19 kHz sortie minimale.	
10	**CIRCUIT SUPPRESSION DE SIGNAL PILOTE (2)**	(C) 98,0 MHz 0 dév Sélection: L ou R Signal pilote: ±6,75 kHz dév 60 dB (Entrée ANT)	(B)	98,0 MHz	L21	Sortie même. (L, R)	
	Répéter les alignements 9 et 10 plusieurs fois.						
11	**DISTORSION (1) (MONO WIDE)**	(A) 98,0 MHz 1 kHz. ±75 kHz dév 80 dB (Entrée ANT)	Connecter l'oscilloscope à la borne OUTPUT par le distorsionmètre.	98,0 MHz	VR9	Distorsion minimale.	(e)
12	**DISTORSION (2) (MONO WIDE)**	(A) 98,0 MHz 1 kHz. ±75 kHz dév 80 dB (Entrée ANT)	Connecter l'oscilloscope à la borne OUTPUT par le distorsionmètre.	98,0 MHz	VR8	Distorsion minimale. Affermir que le tracé de Lissajou sur l'écran de l'oscilloscope ne soit plus qu'une ligne droite.	(e)
13	**DISTORSION (3) (MONO NARROW)**	(A) 98,0 MHz 1 kHz. ±75 kHz dév 80 dB (Entrée ANT)	(B)	FM IF BAND: NARROW 98,0 MHz	VR10	Distorsion minimale.	
14	**DISTORSION (4) (STEREO WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz dév Sélection: L Signal pilote: ±6,75 kHz dév 80 dB (Entrée ANT)	(B)	98,0 MHz	L5	Distorsion minimale.	

REGLAGE

REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
15	**DISTORSION (5) (STEREO WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz dév Sélection: L Signal pilote: ±6,75 kHz dév 80 dB (Entrée ANT)	(B)	98,0 MHz	VR11	Distorsion minimale.	
16	**DISTORSION (6) (STEREO NARROW)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz dév Sélection: L Signal pilote: ±6,75 kHz dév 80 dB (Entrée ANT)	(B)	FM IF BAND: NARROW 98,0 MHz	VR12	Distorsion minimale.	
17	**NIVEAU DU MUTING**	(A) 98,0 MHz 1 kHz. ±75 kHz dév 10 dB (Entrée ANT)	(B)	98,0 MHz	VR2	Tourner VR2 jusqu'à ce que la forme d'onde de sortie disparaisse. Puis tourner VR2 jusqu'à ce que la forme d'onde de sortie réapparaisse à nouveau.	
18	**SEPARATION (1) (WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz dév Sélection: L Signal pilote: ±6,75 kHz dév 80 dB (Entrée ANT)	(B)	98,0 MHz	VR6	Diaphonie minimale.	
19	**SEPARATION (2) (WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz dév Sélection: R Signal pilote: ±6,75 kHz dév 80 dB (Entrée ANT)	(B)	98,0 MHz	VR5	Diaphonie minimale.	
20	**SEPARATION (3) (WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz dév Sélection: L ou R Signal pilote: ±6,75 kHz dév 80 dB (Entrée ANT)	(B)	98,0 MHz	L16 (Le noyau jaune seulement)	Diaphonie minimale.	
	Répéter les alignements 18 ~ 20 plusieur fois.						
21	**SEPARATION (4) (NARROW)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz dév Sélection: L ou R Signal pilote: ±6,75 kHz dév 80 dB (Entrée ANT)	(B)	FM IF BAND: NARROW 98,0 MHz	VR7	Diaphonie minimale.	
SECTION MA	Laisser l'antenne boucle MA installée. SELECTOR: AM AM IF BAND: WIDE						
(1)	**BORD DE BANDE (1)**	—	Connecter un voltmètre CC entre les TP8 et 9 (GND).	522 kHz	L19	2,0 V	(a)
(2)	**BORD DE BANDE (2)**	—	Connecter un voltmètre CC entre les TP8 et 9 (GND).	1611 kHz	TC7	20,0 V	(a)
	Répéter les alignements (1) et (2) plusieur fois.						
(3)	**ALIGNEMENT HT (1)**	(D) 630 kHz 400 Hz. 30% mod	(B)	AM IF BAND: NARROW 630 kHz	L18	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
(4)	**ALIGNEMENT HT (2)**	(D) 1440 kHz 400 Hz. 30% mod	(B)	AM IF BAND: NARROW 1440 kHz	TC6	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
	Répéter les alignements (3) et (4) plusieur fois.						
(5)	**TRANSFORMATEUR FI**	Générateur de balayage: 10,7 MHz Connecter la borne RF OUT au générateur de balayage à la broche 5 de IC7 par le 0,022μF condensateur.	Connecter la borne H OUT au générateur de balayage à la borne H (ou X) de l'oscilloscope. Connecter la borne V (ou Y) de l'oscilloscope à la jonction C82 et R96.	1000 kHz (999 kHz)	L20	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	(f)

ABGLEICH

ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER EINSTELLUNG	ABGLEICHE-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFANGSABTEILUNG	Außer wenn anders angegeben, die verschiedenen Schalter wie folgt einstellen: SELECTOR: FM FM IF BAND: WIDE TUNING MODE: AUTO						
1	**BANDKANTE (1)**	—	Einen Gleich-spannungsmesser zwischen TP8 und 9 (GND) anschließen.	87,5 MHz	L7	7,0 V	(a)
2	**BANDKANTE (2)**	—	Einen Gleich-spannungsmesser zwischen TP8 und 9 (GND) anschließen.	108,0 MHz	TC5	23,0 V	(a)
	Abstimmungen 1 und 2 mehrere Male wiederholen.						
3	**DETEKTOR (1)**	(A) 98,0 MHz 0 Hub 100 dB (ANT-Eingang)	Einen Gleich-spannungsmesser zwischen TP1 und 2 anschließen.	98,0 MHz	L11	Bestätigen so daß die Spannung beide richtung zu + und — ändert. Dann zu 0 V einstellen.	(b)
4	**DETEKTOR (2)**	(A) 98,0 MHz 0 Hub 100 dB (ANT-Eingang)	Einen Gleich-spannungsmesser zwischen TP3 und 4 anschließen.	98,0 MHz	L13	Bestätigen so daß die Spannung beide richtung zu + und — ändert. Dann zu 0 V einstellen.	(c)
5	**HF-ABGLEICH (1)**	(A) 90,0 MHz 1 kHz. ±75 kHz Hub 60 dB (ANT-Eingang)	(B)	MODE: MONO 90,0 MHz	L1, 2, 3, 6	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
6	**HF-ABGLEICH (2)**	(A) 106,0 MHz 1 kHz. ±75 kHz Hub 60 dB (ANT-Eingang)	(B)	MODE: MONO 106,0 MHz	TC1, 2, 3, 4	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
	Abstimmungen 5 und 6 mehrere Male wiederholen.						
7	**ZF-VERSTÄRKUNG (WIDE)**	(A) 98,0 MHz 0 Hub "ANT-Eingang" so einstellen, daß der SIGNAL LEVEL anzeiger nur "1" beim NARROW MODE leuchtet wird.	SIGNAL LED	98,0 MHz	VR1	Den Pegel widerstand VR1 so einstellen, daß der SIGNAL LED anzeiger nicht leuchtet. Dann der Pegel widerstand aufdrehen, und dem VR1 Halt geben wobei den LED "1" anzeiger leuchtet wird.	
8	**SPANNUNGS-GEREGELTER OSZILLATOR**	(A) 98,0 MHz 0 Hub 60 dB (ANT-Eingang)	Einen Frequenz-messer an TP5 über einen Wechselspannungs-messer anschließen.	98,0 MHz	VR3	76,00 kHz	(d)
9	**PILOT-LÖSCHER (1)**	(C) 98,0 MHz 0 Hub Wähler: L oder R Pilotten: ±6,75 kHz Hub 60 dB (ANT-Eingang)	(B)	98,0 MHz	VR4	19 kHz Minimaler Ausgang.	
10	**PILOT-LÖSCHER (2)**	(C) 98,0 MHz 0 Hub Wähler: L oder R Pilotten: ±6,75 kHz Hub 60 dB (ANT-Eingang)	(B)	98,0 MHz	L21	Selbe Ausgang. (L, R)	
	Abstimmungen 9 und 10 mehrere Male wiederholen.						
11	**KLIRRFAKTOR (1) (MONO WIDE)**	(A) 98,0 MHz 1 kHz. ±75 kHz Hub 80 dB (ANT-Eingang)	Ein Oszilloskop zu OUTPUT-Klemme über den Klirrfactor-messer anschließen.	98,0 MHz	VR9	Minimale Klirrfaktor.	(e)
12	**KLIRRFAKTOR (2) (MONO WIDE)**	(A) 98,0 MHz 1 kHz. ±75 kHz Hub 80 dB (ANT-Eingang)	Ein Oszilloskop zu OUTPUT-Klemme über den Klirrfactor-messer anschließen.	98,0 MHz	VR8	Minimale Klirrfaktor. Die Lissajoussche Figur auf dem Bildschirm des Oszilloskope eine gerade Line wird.	(e)
13	**KLIRRFAKTOR (3) (MONO NARROW)**	(A) 98,0 MHz 1 kHz. ±75 kHz Hub 80 dB (ANT-Eingang)	(B)	FM IF BAND: NARROW 98,0 MHz	VR10	Minimale Klirrfaktor.	
14	**KLIRRFAKTOR (4) (STEREO WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: L Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	98,0 MHz	L5	Minimale Klirrfaktor.	

BASIC T2

ABGLEICH

ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER EINSTELLUNG	ABGLEICHE-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFANGSABTEILUNG Außer wenn anders angegeben, die verschiedenen Schalter wie folgt einstellen: SELECTOR: FM FM IF BAND: WIDE TUNING MODE: AUTO							
1	**BANDKANTE (1)**	—	Einen Gleich-spannungsmesser zwischen TP8 und 9 (GND) anschließen.	87,5 MHz	L7	7,0 V	(a)
2	**BANDKANTE (2)**	—	Einen Gleich-spannungsmesser zwischen TP8 und 9 (GND) anschließen.	108,0 MHz	TC5	23,0 V	(a)
Abstimmungen 1 und 2 mehrere Male wiederholen.							
3	**DETEKTOR (1)**	(A) 98,0 MHz 0 Hub 100 dB (ANT-Eingang)	Einen Gleich-spannungsmesser zwischen TP1 und 2 anschließen.	98,0 MHz	L11	Bestätigen so daß die Spannung beide richtung zu + und − ändert. Dann zu 0 V einstellen.	(b)
4	**DETEKTOR (2)**	(A) 98,0 MHz 0 Hub 100 dB (ANT-Eingang)	Einen Gleich-spannungsmesser zwischen TP3 und 4 anschließen.	98,0 MHz	L13	Bestätigen so daß die Spannung beide richtung zu + und − ändert. Dann zu 0 V einstellen.	(c)
5	**HF-ABGLEICH (1)**	(A) 90,0 MHz 1 kHz. ±75 kHz Hub 60 dB (ANT-Eingang)	(B)	MODE: MONO 90,0 MHz	L1, 2, 3, 6	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
6	**HF-ABGLEICH (2)**	(A) 106,0 MHz 1 kHz. ±75 kHz Hub 60 dB (ANT-Eingang)	(B)	MODE: MONO 106,0 MHz	TC1, 2, 3, 4	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
Abstimmungen 5 und 6 mehrere Male wiederholen.							
7	**ZF-VERSTÄRKUNG (WIDE)**	(A) 98,0 MHz 0 Hub "ANT-Eingang" so einstellen, daß der SIGNAL LEVEL anzeiger nur "1" beim NARROW MODE leuchtet wird.	SIGNAL LED	98,0 MHz	VR1	Den Pegel widerstand VR1 so einstellen, daß der SIGNAL LED anzeiger nicht leuchtet. Dann der Pegel widerstand aufdrehen, und dem VR1 Halt geben wobei den LED "1" anzeiger leuchtet wird.	
8	**SPANNUNGS-GEREGELTER OSZILLATOR**	(A) 98,0 MHz 0 Hub 60 dB (ANT-Eingang)	Einen Frequenz-messer an TP5 über einen Wechselspannungs-messer anschließen.	98,0 MHz	VR3	76,00 kHz	(d)
9	**PILOT-LÖSCHER (1)**	(C) 98,0 MHz 0 Hub Wähler: L oder R Pilotten: ±6,75 kHz Hub 60 dB (ANT-Eingang)	(B)	98,0 MHz	VR4	19 kHz Minimaler Ausgang.	
10	**PILOT-LÖSCHER (2)**	(C) 98,0 MHz 0 Hub Wähler: L oder R Pilotten: ±6,75 kHz Hub 60 dB (ANT-Eingang)	(B)	98,0 MHz	L21	Selbe Ausgang. (L, R)	
Abstimmungen 9 und 10 mehrere Male wiederholen.							
11	**KLIRRFAKTOR (1) (MONO WIDE)**	(A) 98,0 MHz 1 kHz. ±75 kHz Hub 80 dB (ANT-Eingang)	Ein Oszilloskop zu OUTPUT-Klemme über den Klirrfactor-messer anschließen.	98,0 MHz	VR9	Minimale Klirrfaktor.	(e)
12	**KLIRRFAKTOR (2) (MONO WIDE)**	(A) 98,0 MHz 1 kHz. ±75 kHz Hub 80 dB (ANT-Eingang)	Ein Oszilloskop zu OUTPUT-Klemme über den Klirrfactor-messer anschließen.	98,0 MHz	VR8	Minimale Klirrfaktor. Die Lissajoussche Figur auf dem Bildschirm des Oszilloskope eine gerade Line wird.	(e)
13	**KLIRRFAKTOR (3) (MONO NARROW)**	(A) 98,0 MHz 1 kHz. ±75 kHz Hub 80 dB (ANT-Eingang)	(B)	FM IF BAND: NARROW 98,0 MHz	VR10	Minimale Klirrfaktor.	
14	**KLIRRFAKTOR (4) (STEREO WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: L Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	98,0 MHz	L5	Minimale Klirrfaktor.	

ABGLEICH

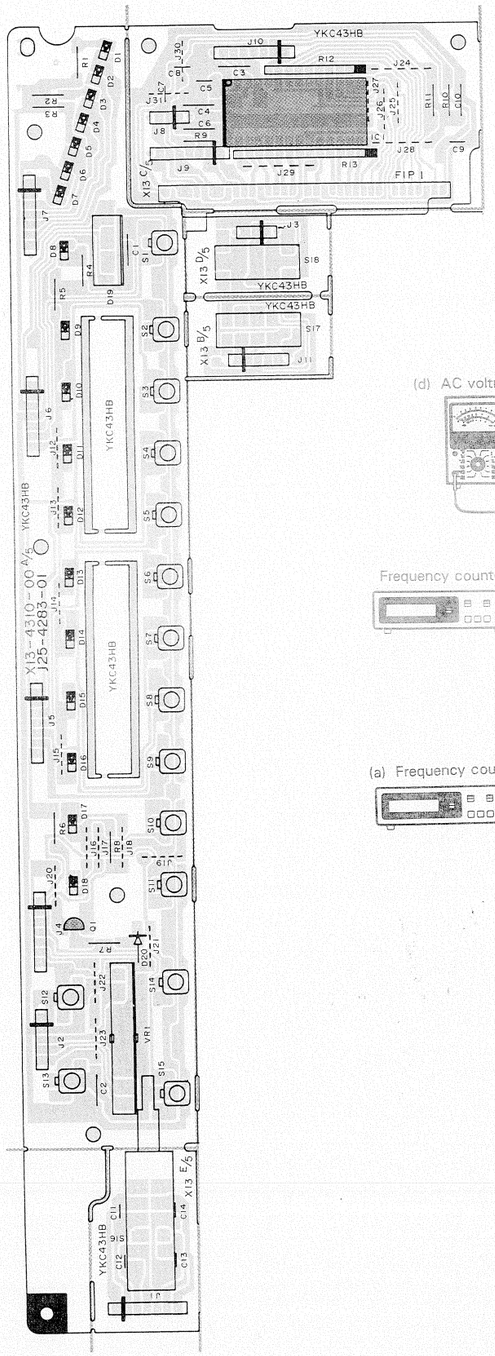
ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER EINSTELLUNG	ABGLEICHE-PUNKTE	ABGLEICHEN FÜR	ABB.
15	**KLIRRFAKTOR (5) (STEREO WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: L Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	98,0 MHz	VR11	Minimale Klirrfaktor.	
16	**KLIRRFAKTOR (6) (STEREO NARROW)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: L Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	FM IF BAND: NARROW 98,0 MHz	VR12	Minimale Klirrfaktor.	
17	**RAUSCHSPERRE-PEGEL**	(A) 98,0 MHz 1 kHz. ±75 kHz Hub 10 dB (ANT-Eingang)	(B)	98,0 MHz	VR2	VR2 entgegen bis die Ausgangswellenform verschwindet. Dann VR2 bis die Ausgangswellenform wieder erscheint.	
18	**STEREO KANAL TRENNUNG (1) (WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: L Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	98,0 MHz	VR6	Minimales Übersprechen.	
19	**STEREO KANAL TRENNUNG (2) (WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: R Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	98,0 MHz	VR5	Minimales Übersprechen.	
20	**STEREO KANAL TRENNUNG (3) (WIDE)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: L oder R Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	98,0 MHz	L16 (Nur gelber Kern)	Minimales Übersprechen.	
Abstimmungen 18 ~ 20 mehrere Male wiederholen.							
21	**STEREO KANAL TRENNUNG (4) (NARROW)**	(C) 98,0 MHz 1 kHz. ±68,25 kHz Hub Wähler: L oder R Pilotten: ±6,75 kHz Hub 80 dB (ANT-Eingang)	(B)	FM IF BAND: NARROW 98,0 MHz	VR7	Minimales Übersprechen.	
MW-EMPFANGSABTEILUNG Die MW-Rahmenantenne angebracht lassen. SELECTOR: AM AM IF BAND: WIDE							
(1)	**BANDKANTE (1)**	—	Einen Gleich-spannungsmesser zwischen TP8 und 9 (GND) anschließen.	522 kHz	L19	2,0 V	
(2)	**BANDKANTE (2)**	—	Einen Gleich-spannungsmesser zwischen TP8 und 9 (GND) anschließen.	1611 kHz	TC7	20,0 V	
Abstimmungen (1) und (2) mehrere Male wiederholen.							
(3)	**HF-ABGLEICH (1)**	(D) 630 kHz 400 Hz, 30% mod	(B)	AM IF BAND: NARROW 630 kHz	L18	Maximale Amplitude und Symmetrie des Oszilloskopbildes.	
(4)	**HF-ABGLEICH (2)**	(D) 1440 kHz 400 Hz, 30% mod	(B)	AM IF BAND: NARROW 1440 kHz	TC6	Maximale Amplitude und Symmetrie des Oszilloskopbildes.	
Abstimmungen (3) und (4) mehrere Male wiederholen.							
(5)	**ZF-ÜBERTRAGER**	ZF-Frequenz: 10,7 MHz Die RF-OUT-Klemme des Ablenk-generatores und Klemme 5 von IC7 über 0,022μF Kondensator anschließen.	Die H-OUT-Klemme des Ablenkgeneratores und die H (oder X)-Klemme des Oszillo-skopes anschließen. Die V (oder Y)-Klemme des Oszilloskopes zu verbindung von C82 und R96 anschließen.	1000 kHz (999 kHz)	L20	Maximale Amplitude und Symmetrie des Oszilloskopbildes.	(f)

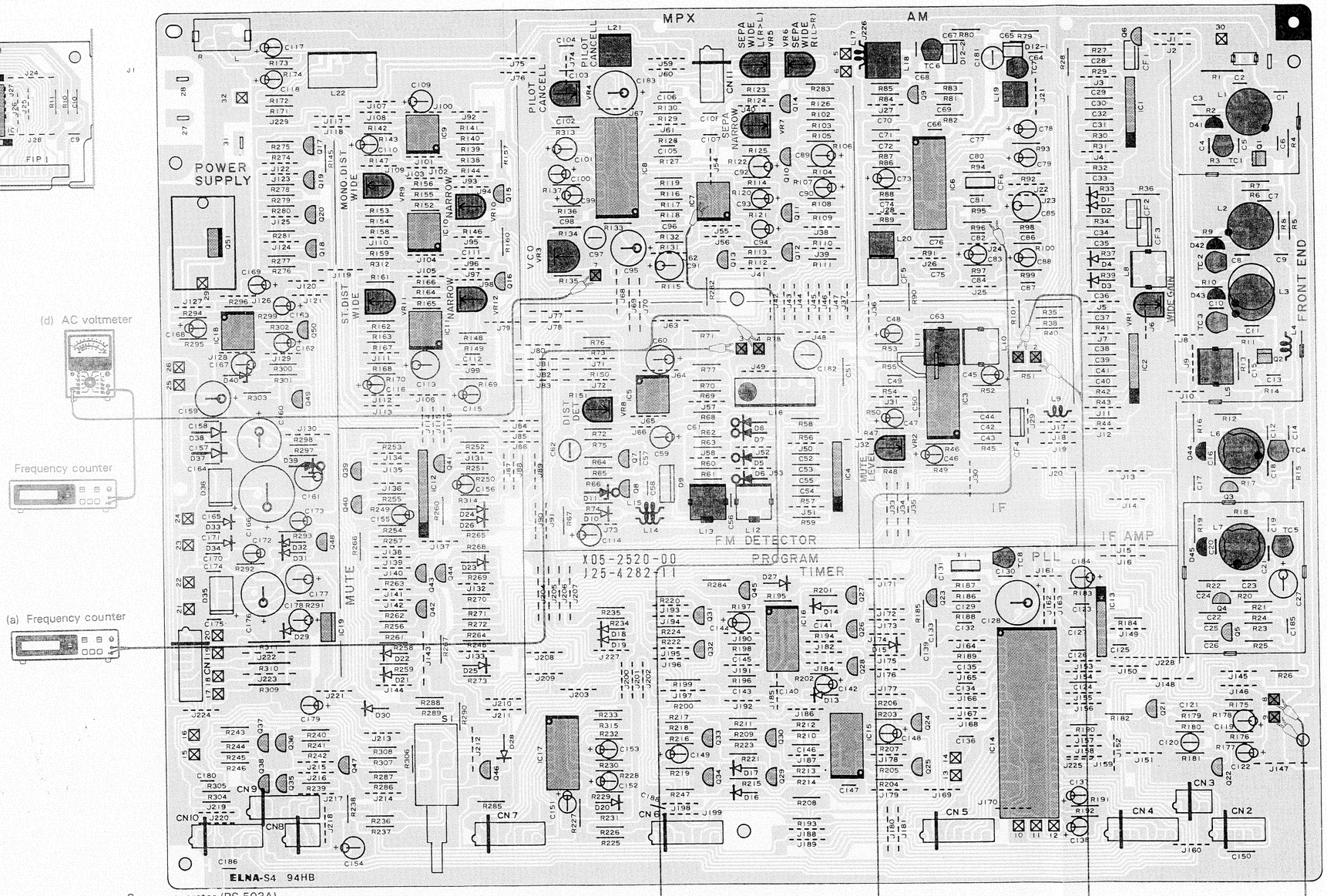
PC BOARD

SUB CIRCUIT (X13-4310-11)

Foil side view



TUNER (X05-2520-11) Component side view



(d) AC voltmeter

Frequency counter

(a) Frequency counter

Sweep generator (RS-503A)

REAR

FRONT

RF OUT

H OUT

Oscilloscope

V

H

Genescope (M-5520)

0.002μF

(b) DC voltmeter

(c) DC voltmeter

If you have our test instrument M-5520 genescope, the connection is much easier.

Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

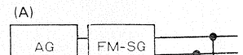
Voltage

	add-ress	Pin	Voltage
Q1	2I	G_1	–
		G_2	3.9V
		D	10.8V
		S	–
Q2	3I	G_1	–
		G_2	–
		D	11.9V
		S	–
Q3	3I	G	0V
		D	7.5V
		S	–
Q4	4I	E	5.5V
		C	12.7V
		B	6.1V
Q5	4I	G	0V
		D	9.2V
		S	–
Q6	1H	G	–
		D	–
		S	9.4V
Q7	3F	G	6.3V
		D	14.9V
		S	11.6V
Q8	3F	G	6.3V
		D	14.9V
		S	11.6V
Q9	1G	G	0.3V (4.8V)
		D	0V (10.9V)
		S	0.6V (6.3V)
Q10	2G	G	6.8V
		D	14.1V
		S	7.1V
Q11	2G	G	0.4V (6.9V)
		D	6.9V
		S	–
Q12	2G	G	–
		D	6.6V
		S	–
Q13	2F	B	0V 0.6V:MUTE
		C	6.8V 0V:MUTE
		E	–
Q14	1G	G	6.9V:N 0V:W
		D	6.2V
		S	–
Q15	2E	G	7.1V:N 0V:W
		D	6.5V
		S	6.4V
Q16	2E	G	7.1V:N 0V:W
		D	6.5V
		S	6.4V
Q17	2D	E	13.9V
		C	13.9V (13.2V)
		B	13.9V (13.2V)
Q18	2D	E	–
		C	13.9V (0.1V)
		B	0V (0.7V)

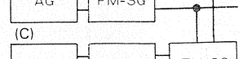
	add-ress	P
Q19	2D	
Q20	2D	
Q21	5H	
Q22	5I	
Q23	4G	
Q24	5G	
Q25	5G	
Q26	4G	
Q27	4G	
Q28	4G	
Q29	5F	
Q30	5F	
Q31	4F	
Q32	4F	
Q33	5F	

Test equipment connections

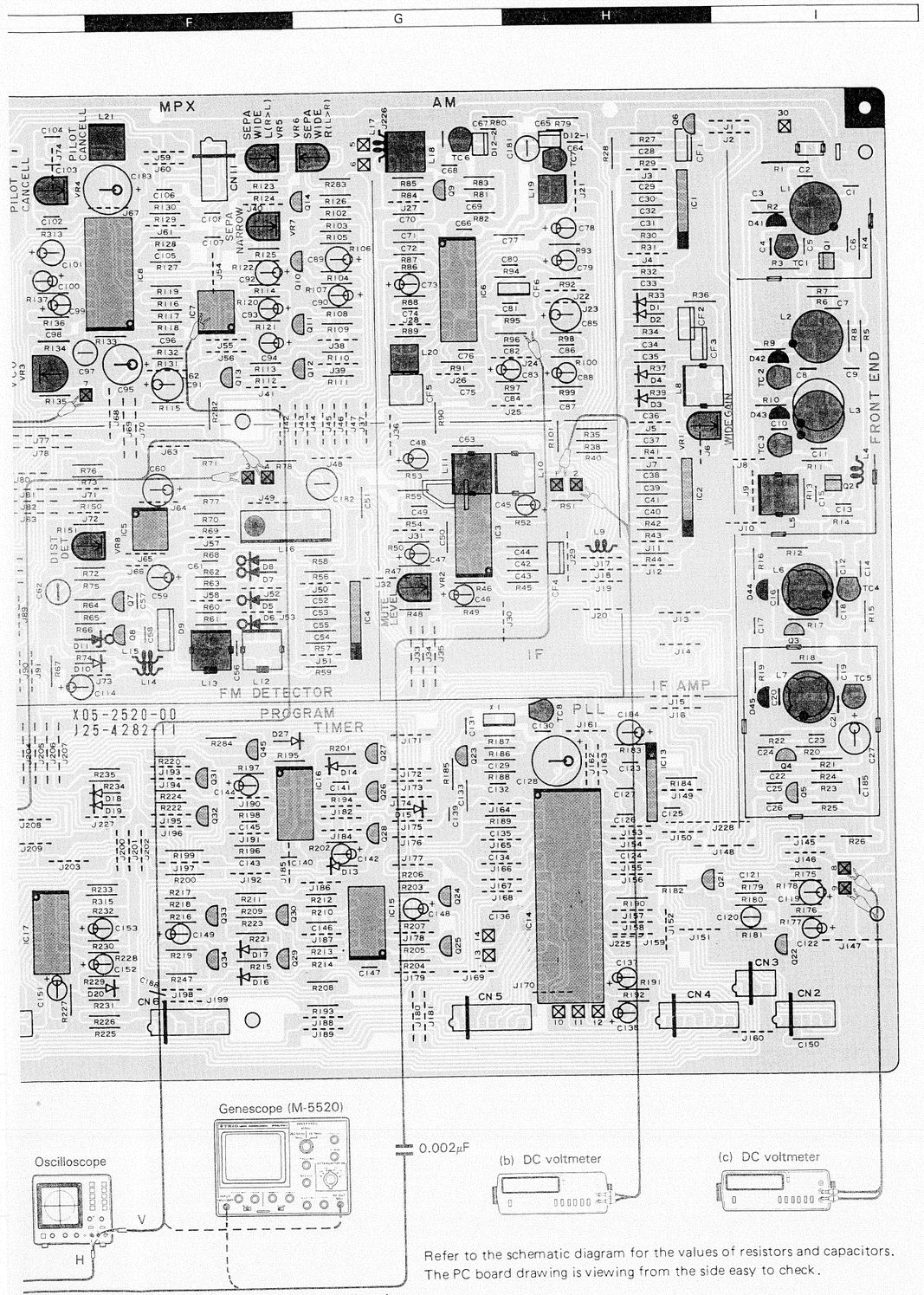
(A)



(C)



PC BOARD



(b) DC voltmeter

(c) DC voltmeter

Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

st instrument M-5520 genescope, the connection is much easier.

Voltage

	add-ress	Pin	Voltage
Q1	2I	G1	—
		G2	3.9V
		D	10.8V
		S	—
Q2	3I	G1	—
		G2	—
		D	11.9V
		S	—
Q3	3I	G	0V
		D	7.5V
		S	—
Q4	4I	E	5.5V
		C	12.7V
		B	6.1V
Q5	4I	G	0V
		D	9.2V
		S	—
Q6	1H	G	—
		D	—
		S	9.4V
Q7	3F	G	6.3V
		D	14.9V
		S	11.6V
Q8	3F	G	6.3V
		D	14.9V
		S	11.6V
Q9	1G	G	0.3V (4.8V)
		D	0V (10.9V)
		S	0.6V (6.3V)
Q10	2G	G	6.8V
		D	14.1V
		S	7.1V
Q11	2G	G	0.4V (6.9V)
		D	6.9V
		S	—
Q12	2G	G	—
		D	6.6V
		S	—
Q13	2F	B	0V 0.6V:MUTE
		C	6.8V 0V:MUTE
		E	—
Q14	1G	G	6.9V:N 0V:W
		D	6.2V
		S	—
Q15	2E	G	7.1V:N 0V:W
		D	6.5V
		S	6.4V
Q16	2E	G	7.1V:N 0V:W
		D	6.5V
		S	6.4V
Q17	2D	E	13.9V
		C	13.9V (13.2V)
		B	13.9V (13.2V)
Q18	2D	E	—
		C	13.9V (0.1V)
		B	0V (0.7V)

	add-ress	Pin	Voltage
Q19	2D	E	13.9V
		C	13.8V (0.1V)
		B	13.2V (13.9V)
Q20	2D	E	—
		C	13.9V (0.1V)
		B	0V (0.7V)
Q21	5H	G	(2.1V~2.4V) 1.9V~2.3V
		D	—
		S	—
Q22	5I	E	—
		C	—
		B	0.54V~0.63V (0.59~0.64V)
Q23	4G	E	2.1V
		C	4.8V
		B	2.8V
Q24	5G	E	5.0V
		C	5.0V:MANU 0V:AUTO
		B	4.2V:M 4.9V:A
Q25	5G	E	5.0V
		C	0V:MANU 4.7V:AUTO
		B	4.9V:MANU 4.1V:AUTO
Q26	4G	E	0V 4.2V:CH-1 ON
		C	5.0V
		B	—
Q27	4G	E	5V:(PWR-ON) 0V
		C	—
		B	4.9V
Q28	4G	E	4.6V
		C	—
		B	0.5V
Q29	5F	E	4.9V:N 0.5V:W
		C	13.8V:N 0.6V:W
		B	2.4V:N 1.1V:W
Q30	5F	E	—
		C	0.6V:N 13.8V:W
		B	1.1V:N 2.4V:W
Q31	4F	E	13.9V
		C	0V:N 13.8V:W
		B	13.8V:N 12.2V:W
Q32	4F	E	13.9V
		C	13.8V:N 0V:W
		B	13.2V:N 13.9V:W
Q33	5F	E	—
		C	0.6V 0V
		B	0.6V 0V

	add-ress	Pin	Voltage
Q34	5F	E	—
		C	0.6V 0V
		B	0.6V 0V
Q35	5D	E	—
		C	0V (10V)
		B	0.7V (10V)
Q36	5D	E	—
		C	12.1V (0V)
		B	0V 0.7V
Q39	3D	E	—
		C	0V 12.8V:MUTE
		B	0.6V 0.1V:MUTE
Q40	3D	E	5.7V(5.6V) 12.3V:MUTE
		C	13.0V
		B	0V 12.8V:MUTE
Q41	3E	E	—
		C	0V:MUTE AUTO 6.3V
		B	0.6V
Q42	4E	E	—
		C	4.9V:TUNED 0V
		B	0V:TUNED 0.6V
Q43	4E	E	—
		C	0V:TUNED 0.6V
		B	0V (0.6V)
Q45	4F	E	4.9V
		C	4.9V
		B	5.4V
Q46	5E	E	4.9V
		C	5.0V
		B	5.6V
Q47	5D	E	14.2V
		C	14.1V
		B	13.5V
Q48	4D	E	—
		C	0V
		B	0.6V
Q49	3D	E	35.2V
		C	42.0V
		B	35.8V
Q50	2D	E	23.9V
		C	42.0V
		B	24.4V
Q51	2C	E	13.9V
		C	21.2V
		B	14.5V
IC1	1H	Pin1	13.0V
		2	10.4V
		3	1.0V
		4	—
		5	1.7V
		6	4.3V
		7	4.3V

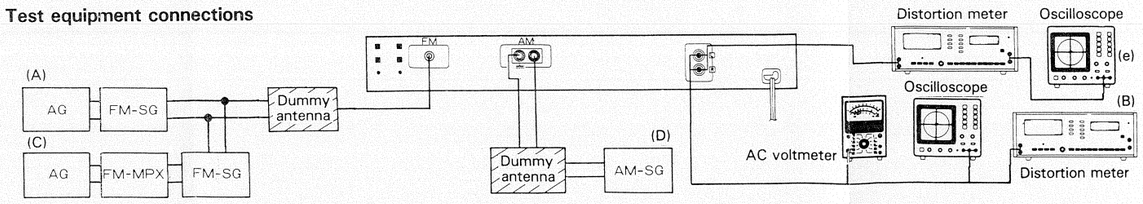
	add-ress	Pin	Voltage
IC2	3H	Pin1	13.0V
		2	11.1V
		3	1.0V
		4	—
		5	1.7V
		6	4.3V
		7	4.3V
IC3	3G	Pin1	3.1V
		2	3.6V
		3	3.1V
		4	0V
		5	0V
		6	5.9V
		7	5.7V
		8	5.7V
		9	5.7V
		10	5.7V
		11	11.5V
		12	0V:TUNED 5.0V
		13	4.9V:TUNED 0.15V
		14	3.7V:TUNED 0V
		15	5.0V
		16	3.1V
IC4	3G	Pin1	12.8V
		2	12.5V
		3	1.0V
		4	—
		5	1.8V
		6	4.2V
		7	4.2V
IC5	3F	Pin1	6.2V
		2	6.4V
		3	6.4V
		4	—
		5	6.4V
		6	6.4V
		7	6.6V
		8	13.5V
IC6	2G	Pin1	(5.6V)
		2	(2.1V)
		3	(2.7V)
		4	(0V)
		5	(10.3V)
		6	(2.0V)
		7	(11.1V)
		8	(11.1V)
		9	(2.7V)
		10	(10.3V)
		11	(0.65V)
		12	(0V)
		13	(2.1V)
		14	(12.4V)
		15	(1.6V)
		16	(0V)
		17	(2.0V)
		18	(5.6V)
		19	(5.6V)
		20	(3.0V)
IC7	2F	Pin1	6.5V
		2	6.5V
		3	6.3V
		4	0V
		5	6.6V
		6	6.6V
		7	6.6V
		8	13.6V

	add-ress	Pin	Voltage
IC8	2F	Pin1	13.0V
		2	6.2V
		3	6.5V
		4	6.5V
		5	6.5V
		6	6.2V
		7	6.5V
		8	6.3V
		9	6.5V
		10	6.3V
		11	0V
		12	13.0V 0.1V:STEREO
		13	4.3V 0.1V:STEREO
		14	6.7V
		15	6.6V
		16	3.0V
		17	3.0V
		18	3.0V
		19	3.0V
		20	3.0V
		21	4.7V
		22	3.3V
IC9	1E	Pin1	8.4V
		2	8.4V
		3	0V
		4	6.4V
		5	6.4V
		6	6.4V
		7	6.4V
		8	6.4V
IC10	2E	Pin1	6.5V:TUNED 7.7V
		2	6.5V:TUNED 6.4V
		3	6.4V
		4	—
		5	6.4V
		6	6.4V
		7	6.4V
		8	13.2V
IC11	2E	Pin1	6.4V
		2	6.4V
		3	6.4V
		4	—
		5	6.4V
		6	6.4V
		7	6.4V
		8	13.3V
IC12	3E	Pin1	SW 0.8V 0V
		2	0V 0.8V:MUTE
		3	0.8V:MANU 0V:AUTO 0.9V:TUNED
		4	6.0V:MANU 8.4V:AUTO 0.5V:TUNED
		5	0V
		6	—
		7	—
		8	0.6V:MUTE
		9	13.0V

	add-ress	Pin	Voltage
IC13	4H	Pin1	4.1V
		2	—
		3	3.0V
		4	—
		5	2.7V
		6	2.7V
		7	2.1V
IC14	5H	Pin1	0V
		2	2.3V
		3	2.2V
		4	4.2V(0V)
		5	0V(4.5V)
		6	0V
		7	0V:AUTO 4.8V:MANU
		8	4.7V:AUTO 0V:MANU
		9	0V,4.8V: UP DEPRESSED
		10	0V,4.8V: DOWN DEPRESSED
		11	0V,4.2V: MEMORY ON
		12	0V 4.2V:CH1-ON
		13	0V 4.2V:CH2-ON
		14	0V 4.2V:CH3-ON
		15	0V 4.2V:CH4-ON
		16	0V 4.2V:CH5-ON
		17	0V 4.2V:CH6-ON
		18	0V 4.2V:CH7-ON
		19	0V 4.2V:CH8-ON
		20	0V
		21	0V
		22	0V
		23	0V
		24	0V:0 DISPLAY 4.9V:5 DISPLAY
		25	0V
		26	0V
		27	0V
		28	0V 4.9V:MUTE ON
		29	0V
		30	0V
		31	5.0V
		32	0V:UNTUNED 4.9V:TUNED
		33	0V:UNTUNED 4.9V:TUNED
		34	1.9~2.3V (2.1~2.4V)
		35	1.9~2.3V (2.1~2.4V)
		36	—
		37	2.3V (4.8V)
		38	2.1~2.9V
		39	4.8V (2.3V)
		40	4.9V
		41	5.0V
		42	5.0V

	add-ress	Pin	Voltage
IC15	5G	Pin1	—
		2	—
		3	—
		4	—
		5	—
		6	—
		7	—
		8	—
		9	—
		10	—
		11	—
		12	—
		13	—
		14	5.0V
IC16	4F	Pin1	—
		2	—
		3	—
		4	0V:PROG-ON 5.0V:PROG-OFF
		5	5.0V:PROG-ON 0V:PROG-OFF
		6	—
		7	—
		8	—
		9	5.0V 5.2V (PWR-OFF)
		10	—
		11	4.9V
		12	5.3V (PWR-OFF) 5.0V
		13	5V (PWR-ON) 0V
		14	5.0V
IC17	5E	Pin1	4.6V
		2	6.6V
		3	8.7V
		4	5.6V
		5	7.7V
		6	5.6V
		7	7.6V
		8	—
		9	—
		10	12.8V
		11	1.2V
		12	1.2V
		13	3.0V
		14	2.7V
		15	0V
		16	0.8V
IC18	2D	Pin1	14.5V
		2	4.9V
		3	4.9V
		4	—
		5	4.9V
		6	4.9V
		7	24.4V
		8	35.2V
IC19	4D	Pin1	—
		2	5.6V
		3	—

Test equipment connections



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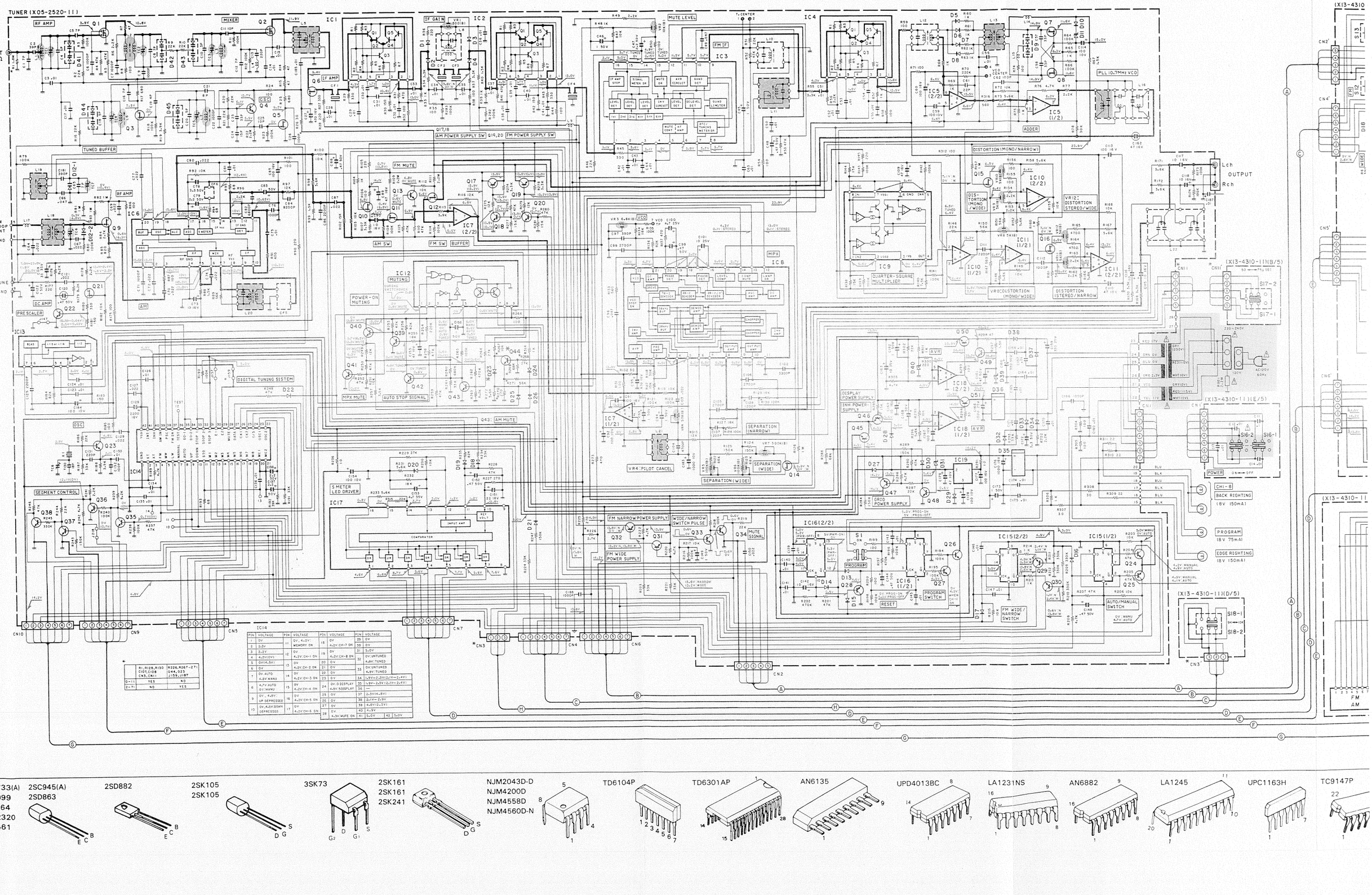
QUARTZ SYNTHESIZER STEREO TUNER



IC14

PIN	VOLTAGE	PIN	VOLTAGE	PIN	VOLTAGE	PIN	VOLTAGE
1	0V	11	0V, 4.2V: MEMORY ON	18	0V	29	0V
2	2.2V				4.2V: CH-7 ON	30	0V
3	2.2V	12	0V	19	0V	31	5.0V
4	4.2V(OV)		4.2V: CH-1 ON		4.2V: CH-8 ON	32	0V: UNTUNED
5	0V(4.5V)	13	0V	20	0V		4.8V: TUNED
6	0V		4.2V: CH-2 ON	21	0V	33	0V: UNTUNED
7	0V: AUTO 4.8V: MANU	14	0V	22	0V		4.9V: TUNED
8	4.7V: AUTO 0V: MANU		4.2V: CH-3 ON	23	0V	34	1.9V↔2.3V(2.1V↔2.4V)
		15	0V	24	0V: DISPLAY 4.8V: DISPLAY	35	1.9V↔2.3V(2.1V↔2.4V)
9	0V, 4.8V: UP DEPRESSED		4.2V: CH-4 ON			36	—
10	0V, 4.8V: DOWN DEPRESSED	16	0V	25	0V	37	2.3V(4.8V)
			4.2V: CH-5 ON	26	0V	38	2.4V(4.2V)
		17	0V	27	0V	39	4.8V(2.5V)
			4.2V: CH-6 ON	28	0V	40	4.9V
					4.9V: MUTE ON	41	5.0V
						42	5.0V

*

	R1, R128, R130 C107, C108 CN3, CN11	R226, R267-271 Q44, Q23 J159, J187
0-11	YES	NO
2-7	NO	YES

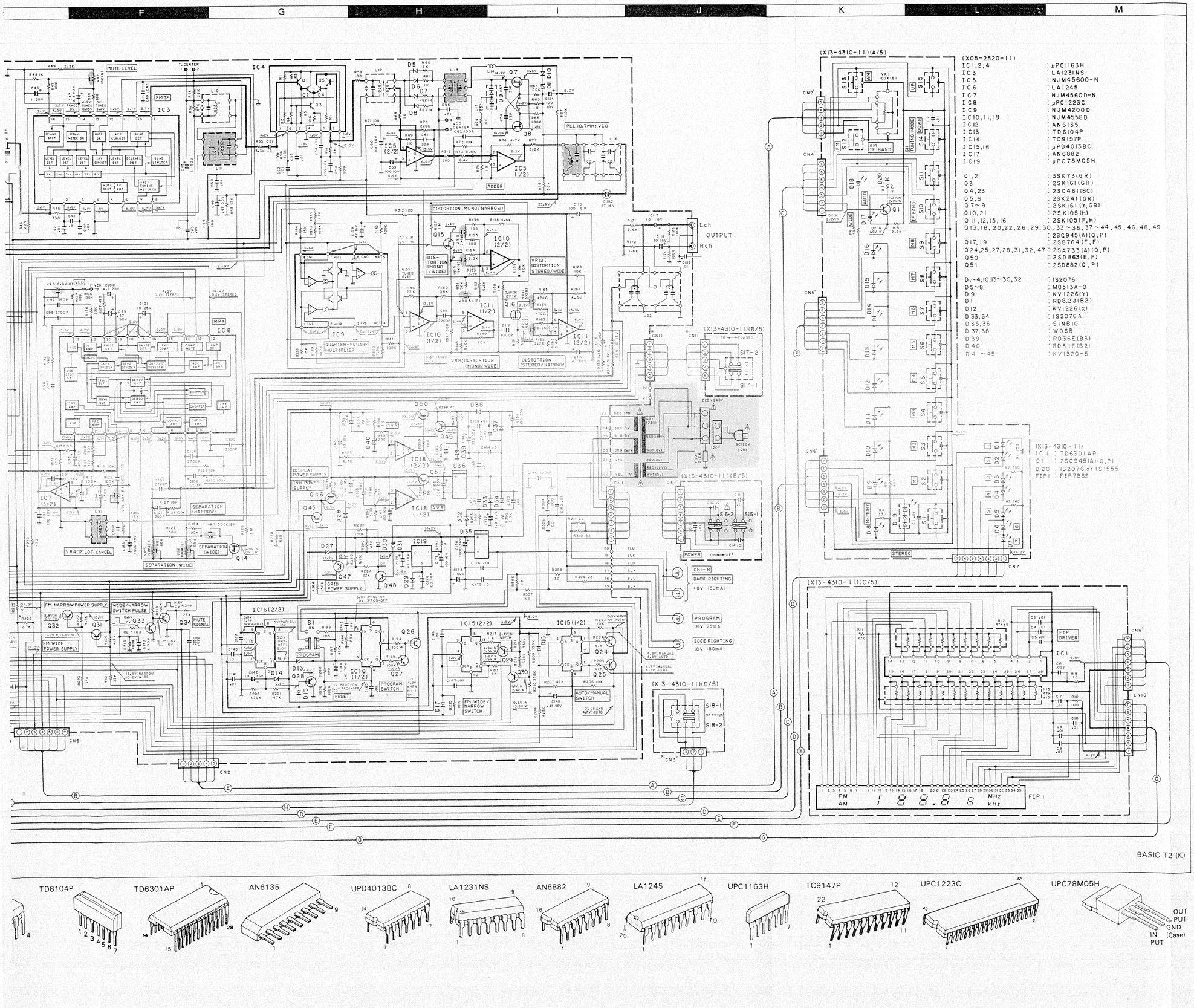
2SA733(A)	2SC945(A)	2SD882	2SK105	3SK73	2SK161
2SA999	2SD863		2SK105		2SK161
2SB764					2SK241
2SC2320					
2SC461					

NJM2043D-D	TD6104P	TD6301AP	AN6135	UPD4013BC	LA1231NS
NJM4200D					
NJM4558D					
NJM4560D-N					

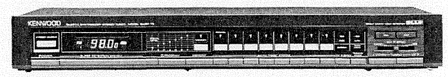
AN6882	LA1245	UPC1163H	TC9147P

QUARTZ SYNTHESIZER STEREO TUNER

BASIC T2



BASIC T2 (K)



Specifications

[FM tuner section]	
Usable sensitivity	10.8 dBf (0.95 μV)
50 dB quieting sensitivity	
Mono	16.2 dBf (1.8 μV)
Stereo	38.8 dBf (24 μV)
Signal to noise ratio at 65 dBf	
Mono	88 dB
Stereo	76 dB
Total harmonic distortion at 1 kHz, wide	
Mono	0.006%
Stereo	0.0095%
Frequency response	20 Hz to 15 kHz ±0.5 dB
Capture ratio	
Wide	1.0 dB
Narrow	2.5 dB
Image rejection ratio	82 dB
Spurious rejection ratio	100 dB
IF rejection ratio	110 dB
Alternate channel selectivity	
Wide	45 dB
Narrow	90 dB
AM suppression ratio	65 dB
Stereo separation ratio	
Wide	68 dB (at 1 kHz), 50 dB (at 50 Hz ~ 10 kHz)
Narrow	50 dB (at 1 kHz), 40 dB (at 50 Hz ~ 10 kHz)
Antenna impedance	75 ohms unbalanced
Output level at 1 kHz, 100% mod	0.6V/1.7 kohms
FM frequency range	87.5 MHz ~ 108 MHz
[AM tuner section]	
AM frequency range	520 kHz ~ 1610 kHz (10 kHz step) 522 kHz ~ 1611 kHz (9 kHz step)
Usable sensitivity	10 μV
Signal to noise ratio	52 dB
Total harmonic distortion	
Wide	0.3%
Narrow	0.8%
Image rejection	40 dB
Selectivity	
Wide	30 dB
Narrow	50 dB
Output level	0.18V/1.7 kohms
[General]	
Power requirements	60 Hz 120V (U.S.A and Canada) or 50/60 Hz 120/220-240V, Switchable
Power consumption	19W
Dimensions	W: 440 mm (17-5/16") H: 64 mm (2-1/2") D: 317 mm (12-1/2")
Weight (Net)	3.8 kg (8.4 lb)

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

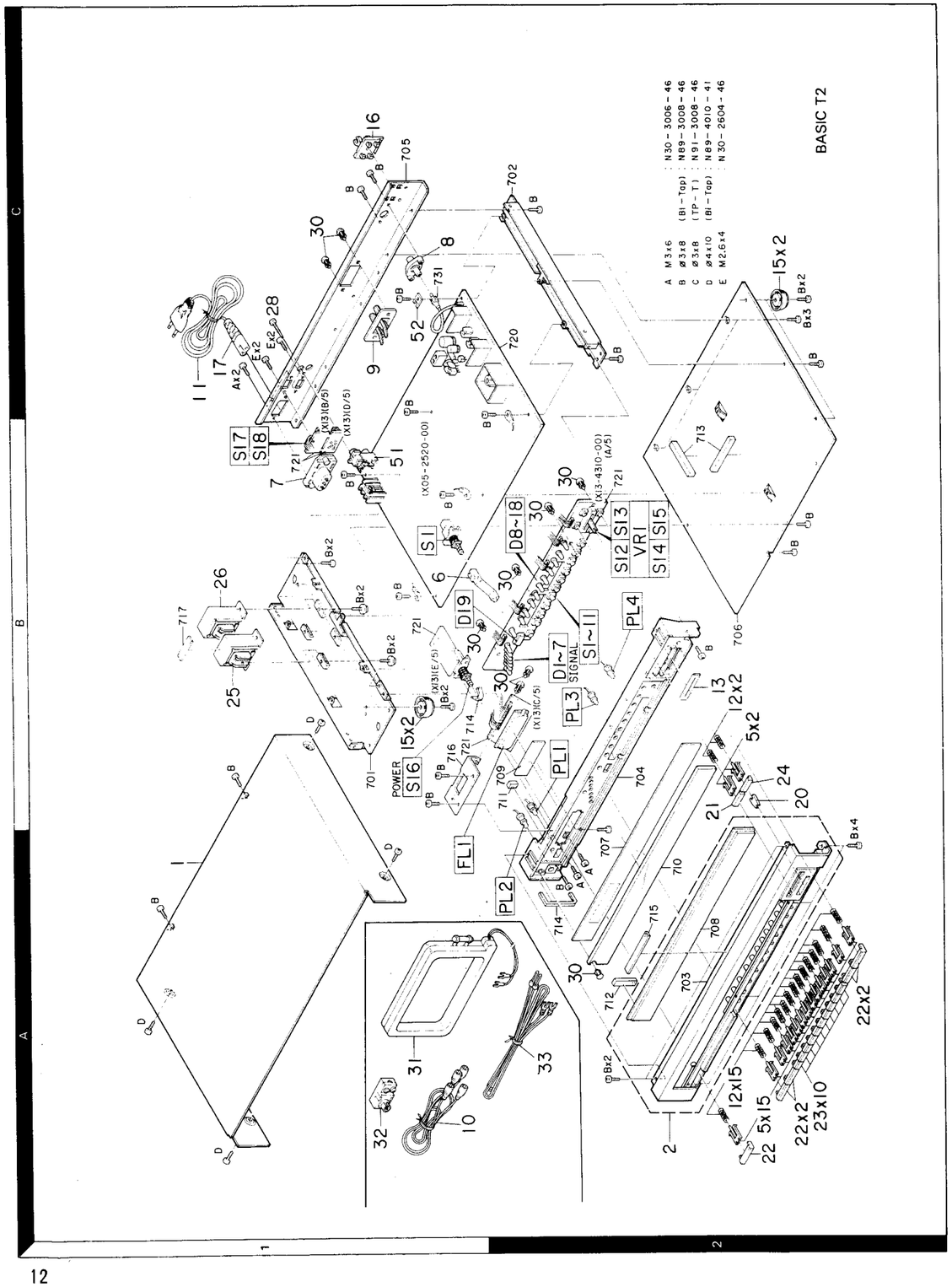
Kenwood strebt ständige Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

DC voltages are as measured with a high impedance voltmeter during reception of the FM broadcast signal (with a signal strength of 60 dB at the ANT terminal). Values may vary slightly due to variations between individual instruments or/and units. Values in parentheses are as measured during reception of the AM broadcast signal (with a signal strength of 60 dB at the ANT terminal).

EXPLODED VIEW

Parts with the exploded numbers 700 or more are not supplied.



12

PARTS LIST

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
BASIC T2						
1	1A	*	A01-1306-03	METALLIC CABINET		
2	2A	*	A20-3838-03	PANEL ASSY		
-			B46-0094-03	WARRANTY CARD	UUE	
-			B46-0095-03	WARRANTY CARD	UUE	
-			B46-0098-03	WARRANTY CARD	E	
-		*	B50-5107-00	INSTRUCTION MANUAL(ENGLISH)	UUE	
-		*	B50-5108-00	INSTRUCTION MANUAL(FRENCH)	E	
-		*	B50-5109-00	INSTRUCTION MANUAL(G,D,SW,I)	E	
PL1	2B		B30-1003-05	LAMP(8V 0.075A)PROGRAM		
PL2 -4	2A,2B		B30-1004-05	LAMP(8V 0.15A) LIGHTING,CH1-8		
5	2A,2B		D10-1180-04	ROD (ALL SWITCH KNOBS)		
6	1B		D21-0600-04	EXTENSION SHAFT(PROG SW SW-S1)		
⚠ 7	1B		E03-0102-15	AC INLET		
8	1C		E04-0006-05	RF COAXIAL CABLE RECEPTACLE		
9	1C		E20-0228-05	SCREW TERMINAL BOARD (ANTENNA)		
10	1A		E30-0505-05	AUDIO CORD		
⚠ 11	1C		E30-1305-15	AC POWER CORD (INLET)	UUE	
⚠ 11	1C		E30-1329-05	AC POWER CORD (INLET)	E	
12	2A,2B		G01-0498-04	COMPRESSION SPRING (ALL KNOBS)		
13	2B		G10-0065-04	NON-WOVEN FABRIC		
-		*	H01-5065-04	ITEM CARTON CASE		
-			H10-1671-13	POLYSTYRENE FOAMED FIXTURE		
-			H25-0078-04	PROTECTION BAG (235X315)		
-			H25-0181-04	PROTECTION BAG (150X260X0.05)		
-			H25-0216-04	PROTECTION BAG		
15	1B,1C		J02-0130-05	FOOT		
16	1C		J19-0875-03	ANTENNA HOLDER		
-			J61-0307-05	WIRE BAND		
20	2B		K27-0863-04	KNOB(LEVER) AM IF BAND		
21	2B		K29-1342-04	KNOB FM		
22	2A		K29-1343-04	KNOB POWER,PROG,MEM,DOWN,UP		
23	2A		K29-1344-04	KNOB CH1-8,FM IF BAND,MODE		
24	2B		K29-1441-04	KNOB AM		
⚠ 25	1B		L01-3244-05	POWER TRANSFORMER		
⚠ 26	1B		L01-3464-05	POWER TRANSFORMER		
28	1C		N09-0292-05	STEPPED SCREW GND	E	
30	2A,2B		N29-0216-05	RIVET		
31	1A		T90-0111-15	LOOP ANTENNA		
32	1A		T90-0122-05	ANTENNA ADAPTOR		
33	2A		T90-0132-05	T TYPE ANTENNA		
TUNER (X05-2520-11)						
C1			CC45FSL1H070D	CERAMIC 7.0PF D		
C2			CC45FSL1H390J	CERAMIC 39PF J		
C3			CK45FF1H103Z	CERAMIC 0.01UF Z		
C4			CC45FTH1H050C	CERAMIC 5PF C		
C5			CC45FSL1H070D	CERAMIC 7.0PF D		
C6 ,7			CK45FB1H102K	CERAMIC 0.001UF K		
C8			CC45FTH1H070D	CERAMIC 7.0PF D		
C9			CK45FB1H102K	CERAMIC 0.001UF K		

E: Scandinavia & Europe **H**:Audio Club **K**: USA **P**: Canada
S: South Africa **T**: England **U**: PX(Far East, Hawaii)
UE: AAFES(Europe) **X**: Australia **M**: Other Areas

⚠ indicates safety critical components.

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-		*	B50-5108-00	INSTRUCTION MANUAL(FRENCH)	E	
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9	1C		E20-0228-05	SCREW TERMINAL BOARD (ANTENNA)		
10	1A		E30-0505-05	AUDIO CORD		
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⚠ 11	1C		E30-1329-05	AC POWER CORD (INLET)	E	
12	2A,2B		G01-0498-04	COMPRESSION SPRING (ALL KNOBS)		
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-		*	H01-5065-04	ITEM CARTON CASE		
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22	2A		K29-1343-04	KNOB POWER,PROG,MEM,DOWN,UP		
23	2A		K29-1344-04	KNOB CH1-8,FM IF BAND,MODE		
24	2B		K29-1441-04	KNOB AM		
⚠ 25	1B		L01-3244-05	POWER TRANSFORMER		
⚠ 26	1B		L01-3464-05	POWER TRANSFORMER		
28	1C		N09-0292-05	STEPPED SCREW GND	E	
30	2A,2B		N29-0216-05	RIVET		
31	1A		T90-0111-15	LOOP ANTENNA		
32	1A		T90-0122-05	ANTENNA ADAPTOR		
33	2A		T90-0132-05	T TYPE ANTENNA		
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C2			CC45FSL1H390J	CERAMIC 39PF J		
C3			CK45FF1H103Z	CERAMIC 0.01UF Z		
C4			CC45FTH1H050C	CERAMIC 5PF C		
C5			CC45FSL1H070D	CERAMIC 7.0PF D		
C6 ,7			CK45FB1H102K	CERAMIC 0.001UF K		
C8			CC45FTH1H070D	CERAMIC 7.0PF D		
C9			CK45FB1H102K	CERAMIC 0.001UF K		

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C10			CC45FTH1H030C	CERAMIC 3.0PF C		
C11			CC45FSL1H100D	CERAMIC 10PF D		
C12			CC45FSL1H070D	CERAMIC 7.0PF D		
C13			CC45FSL1H221J	CERAMIC 220PF J		
C14 ,15			CK45FF1H103Z	CERAMIC 0.01UF Z		
C16			CC45FSL1H070D	CERAMIC 7.0PF D		
C17			CK45FF1H103Z	CERAMIC 0.01UF Z		
C18			CC45FTH1H050C	CERAMIC 5PF C		
C19			CC45FSL1H040C	CERAMIC 4.0PF C		
C20			CC45FTH1H050C	CERAMIC 5PF C		
C21			CC45FTH1H080D	CERAMIC 8PF D		
C22			CK14B1H102K	CERAMIC 0.001UF K		
C23			CC45FSL1H330J	CERAMIC 33PF J		
C24			CC45FSL1H150J	CERAMIC 15PF J		
C25			CC45FSL1H100D	CERAMIC 10PF D		
C26			CC45FSL1H101J	CERAMIC 100PF J		
C27			CE04FW1C471M	ELECTRO 470UF 16WV		
C28 -44			C91-0083-05	CERAMIC 0.01UF N		
C45 ,46			CE04FW1H010M	ELECTRO 1UF 50WV		
C47			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
C48			CE04FW1HR47M	ELECTRO 0.47UF 50WV		
C49			CK45FF1H473Z	CERAMIC 0.047UF Z		
C50 -55			C91-0083-05	CERAMIC 0.01UF N		
C57 ,58			CC45FCH1H330J	CERAMIC 33PF J		
C59			CE04FW1A101M	ELECTRO 100UF 10WV		
C60			CE04FW1C101M	ELECTRO 100UF 16WV		
C61			CC45FSL1H220J	CERAMIC 22PF J		
C62			CQ09FS1H101J	POLYSTY 100PF J		
C63			C91-0083-05	CERAMIC 0.01UF N		
C64			CK45FF1H223Z	CERAMIC 0.022UF Z		
C65			CC45FUJ1H070D	CERAMIC 7.0PF D		
C66			CK45FF1H473Z	CERAMIC 0.047UF Z		
C67			CK45FF1H223Z	CERAMIC 0.022UF Z		
C68			CK45FB1H102K	CERAMIC 0.001UF K		
C69			CK45FF1H223Z	CERAMIC 0.022UF Z		
C70			C91-0085-05	CERAMIC 0.022UF N		
C71			CK14B1H102K	CERAMIC 0.001UF K		
C72			C91-0085-05	CERAMIC 0.022UF N		
C73			CE04FW1C100M	ELECTRO 10UF 16WV		
C74			CK45FF1H223Z	CERAMIC 0.022UF Z		
C75			CK45FF1H103Z	CERAMIC 0.01UF Z		
C76			CK45FB1H102K	CERAMIC 0.001UF K		
C77			C91-0085-05	CERAMIC 0.022UF N		
C78			CE04FW1H3R3M	ELECTRO 3.3UF 50WV		
C79			CE04FW1H2R2M	ELECTRO 2.2UF 50WV		
C80			CK45FF1H223Z	CERAMIC 0.022UF Z		
C81			CF92FV1H103J	MF 0.010UF J		
C82			CF92FV1H682J	MF 6800PF J		
C83			CE04FW1H0R1M	ELECTRO 0.1UF 50WV		
C84			CF92FV1H822J	MF 8200PF J		
C85			CE04FW1C101M	ELECTRO 100UF 16WV		
C86			CF92FV1H222J	MF 2200PF J		
C87			CF92FV1H223J	MF 0.022UF J		
C88			CE04FW1HR47M	ELECTRO 0.47UF 50WV		
C89			CE04FW1C470M	ELECTRO 47UF 16WV		

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C90			CE04FW1C100M	ELECTRO	10UF	16WV		
C91			CE04FW1C101M	ELECTRO	100UF	16WV		
C92			CE04FW1A101M	ELECTRO	100UF	10WV		
C93 ,94			CE04FW1H010M	ELECTRO	1UF	50WV		
C95			CE04FW1C471M	ELECTRO	470UF	16WV		
C96			CF92FV1H473J	MF	0.047UF	J		
C97			CQ09FS1H391JYO	POLYSTY	390PF	J		
C98			CF92FV1H272J	MF	2700PF	J		
C99			CE04GW1HR47M	LL-ELEC	0.47UF	50WV		
C100			CE04GW1E4R7M	LL-ELEC	4.7UF	25WV		
C101			CE04GW1E100M	LL-ELEC	10UF	25WV		
C102			CF92FV1H332J	MF	3300PF	J		
C103			CF92FV1H223J	MF	0.022UF	J		
C104			CF92FV1H472J	MF	4700PF	J		
C105,106			CF92FV1H272J	MF	2700PF	J		
C107,108			CF92FV1H122J	MF	1200PF	J	UUE	
C109			CE04FW1C470M	ELECTRO	47UF	16WV		
C110			CE04FW1A470M	ELECTRO	47UF	10WV		
C111			CF92FV1H222J	MF	2200PF	J		
C112			CF92FV1H102J	MF	1000PF	J		
C113			CE04FW1C101M	ELECTRO	100UF	16WV		
C114			CE04FW1A101M	ELECTRO	100UF	10WV		
C115-118			CE04FW1C100M	ELECTRO	10UF	16WV		
C119			CE04FW1V330M	ELECTRO	33UF	35WV		
C120			CE04HW1HR47M	NP-ELEC	0.47UF	50WV		
C121			CF92FV1H223J	MF	0.022UF	J		
C122			CE04GW1H010M	LL-ELEC	1.0UF	50WV		
C123			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C124			C91-0083-05	CERAMIC	0.01UF	N		
C125			CK45FB1H222K	CERAMIC	2200PF	K		
C126			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C127			CK45FF1H223Z	CERAMIC	0.022UF	Z		
C128			C90-1287-05	ELECTRO	2200UF	16WV		
C129			C91-0085-05	CERAMIC	0.022UF	N		
C130			CC45FCH1H180J	CERAMIC	18PF	J		
C131			CC45FSL1H221J	CERAMIC	220PF	J		
C132			CC45FSL1H101J	CERAMIC	100PF	J		
C133			C91-0083-05	CERAMIC	0.01UF	N		
C134			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C135			C91-0083-05	CERAMIC	0.01UF	N		
C136			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C137,138			CE04FW1H2R2M	ELECTRO	2.2UF	50WV		
C139-141			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C142			CE04FW1C100M	ELECTRO	10UF	16WV		
C143			C91-0083-05	CERAMIC	0.01UF	N		
C144			CE04FW1HR47M	ELECTRO	0.47UF	50WV		
C145			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C146			C91-0083-05	CERAMIC	0.01UF	N		
C147			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C148			CE04FW1HR47M	ELECTRO	0.47UF	50WV		
C149			CE04FW1H010M	ELECTRO	1UF	50WV		
C150			C91-0085-05	CERAMIC	0.022UF	N		
C151			CE04FW1C220M	ELECTRO	22UF	16WV		
C152			CE04FW1HR47M	ELECTRO	0.47UF	50WV		
C153			CE04FW1V4R7M	ELECTRO	4.7UF	35WV		

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C154			CE04FW1A101M	ELECTRO	100UF	10WV		
C155			CE04FW1A470M	ELECTRO	47UF	10WV		
C156			CE04FW1H010M	ELECTRO	1UF	50WV		
C157,158			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C159			CE04FW1E331M	ELECTRO	330UF	25WV		
C160			CE04FW1H331M	ELECTRO	330UF	50WV		
C161			CE04FW1H470M	ELECTRO	47UF	50WV		
C162			CE04FW1H010M	ELECTRO	1UF	50WV		
C163			CE04FW1V100M	ELECTRO	10UF	35WV		
C164,165			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C166			CE04FW1E102M	ELECTRO	1000UF	25WV		
C167			CE04FW1A101M	ELECTRO	100UF	10WV		
C168			CE04FW1H010M	ELECTRO	1UF	50WV		
C169			CE04FW1C100M	ELECTRO	10UF	16WV		
C170,171			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C172			CE04FW1H3R3M	ELECTRO	3.3UF	50WV		
C173			CE04FW1H010M	ELECTRO	1UF	50WV		
C174,175			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C176			CE04FW1C102M	ELECTRO	1000UF	16WV		
C177			CE04FW1C101M	ELECTRO	100UF	16WV		
C178			CE04FW1A101M	ELECTRO	100UF	10WV		
C179			CE04FW1A470M	ELECTRO	47UF	10WV		
C180			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C181			CQ09FS1H391JYO	POLYSTY	390PF	J		
C182			CE04HW1C470M	NP-ELEC	47UF	16WV		
C183			CE04FW1A102M	ELECTRO	1000UF	10WV		
C184			CE04FW1A101M	ELECTRO	100UF	10WV		
C185			CK45FF1H103Z	CERAMIC	0.01UF	Z		
C186			CK45FB1H102K	CERAMIC	0.001UF	K		
C187			CK45F1H103Z	CERAMIC	0.01UF	Z		E
C188			CK45B1H102K	CERAMIC	0.001UF	K		
TC1 -4			C05-0302-05	CERAMIC TRIMMER CAPACITOR 11PF				
TC5			C05-0301-05	CERAMIC TRIMMER CAPACITOR 7PF				
TC6			C05-0303-05	CERAMIC TRIMMER CAPACITOR 20PF				
TC7			C05-0302-05	CERAMIC TRIMMER CAPACITOR 11PF				
TC8			C05-0093-05	CERAMIC TRIMMER CAPACITOR 60PF				
51	1B		E13-0217-05	PHONO JACK	OUTPUT			
52	1C		E23-0125-05	TERMINAL	GND			
CF1			L72-0185-05	CERAMIC FILTER (MXH15-A)				
CF2 ,3			L72-0190-05	CERAMIC FILTER (MS3GH15-A)				UUE
CF2 ,3			L72-0195-05	CERAMIC FILTER				E
CF4			L72-0185-05	CERAMIC FILTER (MXH15-A)				
CF5			L72-0097-05	CERAMIC FILTER				
CF6			L72-0096-05	CERAMIC FILTER				
L1			L31-0495-05	FM-RF COIL				
L2			L31-0492-05	FM-RF COIL				
L3			L31-0495-05	FM-RF COIL				
L4			L40-1092-14	SMALL FIXED INDUCTOR		1.0UH,M		
L5			L30-0318-05	FM IFT				
L6 ,7			L32-0270-05	FM OSCILLATING COIL				
L8			L30-0318-05	FM IFT				
L9			L40-1001-14	SMALL FIXED INDUCTOR		1.0UH,K		
L10			L39-0089-05	PEAKING COIL		120KHZ		

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L11			L30-0361-15	FM IFT		
L12			L30-0341-05	FM IFT		
L13			L32-0275-05	FM OSCILLATING COIL		
L14 ,15			L40-1001-14	SMALL FIXED INDUCTOR 1.0UH,K		
L16			L79-0162-05	LC FILTER L.P.F.		
L17			L40-1092-14	SMALL FIXED INDUCTOR 1.0UH,M		
L18			L31-0472-05	MW-RF COIL		
L19			L32-0277-15	MW OSCILLATING COIL		
L20			L30-0337-05	AM IFT		
L21			L35-0059-05	MPX COIL		
L22			L79-0107-05	LC FILTER		
X1			L77-0578-05	CRYSTAL RESONATOR 7.2MHZ		
R1			RC05GF2H185M	RC 1.8M M 2H	UUE	
R15			RD14GB2E470J	FL-PROOF RD 47 J 2E		
R24			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R26			RD14AB2E300J	FL-PROOF RD 30 J 2E		
R32			RD14AB2E101J	FL-PROOF RD 100 J 2E		
R44			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R54			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R58			RD14AB2E101J	FL-PROOF RD 100 J 2E		
R71			RD14AB2E101J	FL-PROOF RD 100 J 2E		
R101			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R131			RD14AB2E101J	FL-PROOF RD 100 J 2E		
R132			RD14AB2E300J	FL-PROOF RD 30 J 2E		
R134			RN14BK2E1802G	RN 18 2 2E		
R175			RD14AB2E101J	FL-PROOF RD 100 J 2E		
R266			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R291			RD14AB2E100J	FL-PROOF RD 10 J 2E		
R298			RD14AB2E470J	FL-PROOF RD 47 J 2E		
R307,308			RD14GB2E300J	FL-PROOF RD 30 J 2E		
R309-311			RS14DB3D220J	FL-PROOF RS 22 J 3D		
R312			RD14AB2E101J	FL-PROOF RD 100 J 2E		
VR1			R12-0306-05	TRIM POT. (500) WIDE IF GAIN		
VR2			R12-3312-05	TRIM POT. (10K) MUTE LEVEL		
VR3			R12-2024-05	TRIM POT. (6.8K)VCO		
VR4			R12-4306-05	TRIM POT. (50K) PILOT CANCEL		
VR5 ,6			R12-5309-05	TRIM POT. (100K)SEPARATION(W)		
VR7			R12-7017-05	TRIM POT. (200K)SEPARATION(N)		
VR8 -12			R12-2305-05	TRIM POT. (5K) DISTORTION		
S1	1B		S40-2146-05	PUSH SWITCH PROGRAM		
D1 -4			1S1555	DIODE		
D1 -4			1S2076	DIODE		
D5 -8			MB513A-0	VARISTOR		
D9			KV1226(Y)	VARIABLE CAPACITANCE DIODE		
D10			1S1555	DIODE		
D10			1S2076	DIODE		
D11			RD8.2J(B2)	ZENER DIODE		
D12			KV1226(EF)	VARIABLE CAPACITANCE DIODE		
D12			KV1226(X)	VARIABLE CAPACITANCE DIODE		
D13 -22			1S1555	DIODE	UUE	
D13 -22			1S2076	DIODE	UUE	
D13 -30			1S1555	DIODE	E	
D13 -30			1S2076	DIODE	E	

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D24 -30			1S1555	DIODE	UUE	
D24 -30			1S2076	DIODE	UUE	
D31			RD8.2E(B2)	ZENER DIODE		
D32			1S1555	DIODE		
D32			1S2076	DIODE		
D33 ,34			1S2076A	DIODE		
D35 ,36			S1WB10	DIODE		
D37 ,38			W06B	DIODE		
D39			RD36E(B3)	ZENER DIODE		
D40			RD5.1E(B2)	ZENER DIODE		
D41 -45			KV1320-5	VARIABLE CAPACITANCE DIODE		
IC1 ,2			UPC1163H	IC IF AMP		
IC3			LA1231NS	IC FM-IF		
IC4			UPC1163H	IC IF AMP		
IC5			NJM4560D-N	IC OP AMP		
IC6			LA1245	IC AM IC		
IC7			NJM4560D-N	IC OP AMP		
IC8			UPC1223C	IC MPX		
IC9			NJM4200D	IC		
IC10,11			NJM4558D	IC OP AMP		
IC12			AN6135	IC MUTING		
IC13			TD6104P	IC FM PRE-SCALER		
IC14			TC9157P	IC DIGITAL TUNING SYSTEM		
IC15,16			UPD4013BC	IC D FLIP-FLOP		
IC17			AN6882	IC LED DRIVER		
IC18			NJM4558D	IC OP AMP		
IC19			UPC78M05H	IC VOLTAGE REGULATOR(+5V)		
Q1 ,2			3SK73(GR)	FET		
Q3			2SK161(GR)	FET		
Q4			2SC461(B,C)	TRANSISTOR		
Q5 ,6			2SK241(GR)	FET		
Q7 -9			2SK161(Y,GR)	FET		
Q10			2SK105(H)	FET		
Q11 ,12			2SK105(F,H)	FET		
Q13			2SC2320(E,F)	TRANSISTOR		
Q13			2SC945(A)(Q,P)	TRANSISTOR		
Q14 -16			2SK105(F,H)	FET		
Q17			2SB764(E,F)	TRANSISTOR		
Q18			2SC2320(E,F)	TRANSISTOR		
Q18			2SC945(A)(Q,P)	TRANSISTOR		
Q19			2SB764(E,F)	TRANSISTOR		
Q20			2SC2320(E,F)	TRANSISTOR		
Q20			2SC945(A)(Q,P)	TRANSISTOR		
Q21			2SK105(H)	FET		
Q22			2SC2320(E,F)	TRANSISTOR		
Q22			2SC945(A)(Q,P)	TRANSISTOR		
Q23			2SC461(B,C)	TRANSISTOR		
Q24 ,25			2SA733(A)(Q,P)	TRANSISTOR		
Q24 ,25			2SA999(E,F)	TRANSISTOR		
Q26			2SC2320(E,F)	TRANSISTOR		
Q26			2SC945(A)(Q,P)	TRANSISTOR		
Q27 ,28			2SA733(A)(Q,P)	TRANSISTOR		
Q27 ,28			2SA999(E,F)	TRANSISTOR		
Q29 ,30			2SC2320(E,F)	TRANSISTOR		
Q29 ,30			2SC945(A)(Q,P)	TRANSISTOR		

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Q31 ,32			2SA733(A)(Q,P)	TRANSISTOR		
Q31 ,32			2SA999(E,F)	TRANSISTOR		
Q33 -43			2SC2320(E,F)	TRANSISTOR	UUE	
Q33 -43			2SC945(A)(Q,P)	TRANSISTOR	UUE	
Q33 -46			2SC2320(E,F)	TRANSISTOR	E	
Q33 -46			2SC945(A)(Q,P)	TRANSISTOR	E	
Q45 ,46			2SC2320(E,F)	TRANSISTOR	UUE	
Q45 ,46			2SC945(A)(Q,P)	TRANSISTOR	UUE	
Q47			2SA733(A)(Q,P)	TRANSISTOR		
Q47			2SA999(E,F)	TRANSISTOR		
Q48 ,49			2SC2320(E,F)	TRANSISTOR		
Q48 ,49			2SC945(A)(Q,P)	TRANSISTOR		
Q50			2SD863(E,F)	TRANSISTOR		
Q51			2SD882(Q,P)	TRANSISTOR		
SUB-CIRCUIT (X13-4310-11)						
D1 -7	2B		B30-0432-05	LED(LN31GCPH(U)) SIGNAL		
D8 -18	2B		B30-0431-05	LED(LN21CPH) MEM,CH,WIDE,AUTO		
D19	1B		B30-0486-05	LED(SLF-106D) STEREO		
C1 -4			C91-0083-05	CERAMIC 0.01UF N		
C5			CK45FF1H103Z	CERAMIC 0.01UF Z		
C6			C91-0085-05	CERAMIC 0.022UF N		
C7 -9			CK45FF1H103Z	CERAMIC 0.01UF Z		
C10			C91-0083-05	CERAMIC 0.01UF N		
C11			CF92FV1H104J	MF 0.10UF J		
C12 -14			CK45FF1H103Z	CERAMIC 0.01UF Z		
R12			R90-0193-05	MULTI-COMP 47KX9 J 2B		
R13			R90-0192-05	MULTI-COMP 47KX13 J 2B		
VR1	2B		R13-5046-05	SLIDE POT.(100KB) AM IF BAND		
S1 -15	2B		S40-1068-05	PUSH SW (CH1-8,PROG,MEM ETC.)		
⚠ S16	1B		S40-4053-05	PUSH SW (POWER)		
S17 ,18	1C		S31-2072-05	SLIDE SWITCH(DE-EMPH,CH-SPACE)	UUE	
D20			1S1555	DIODE		
D20			1S2076	DIODE		
FL1	1A		FIP7B8S	FLUORESCENT INDICATOR TUBE		
IC1			TD6301AP	IC		
Q1			2SC2320(E,F)	TRANSISTOR		
Q1			2SC945(A)(Q,P)	TRANSISTOR		

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